Presidential Address
ON
THE GROWTH OF SCIENCE IN THE CENTURY AND ITS LESSONS.

Delivered at the Annual Meeting of the British Association for the Advancement of Science at Dover on Sept. 13th, 1899,

BY PROFESSOR SIR MICHAEL FOSTER, K.C.B., F.R.S., M.D. LOND.

GENTLEMEN,—He who until a few minutes ago was your President said somewhere at the meeting at Bristol, and said with truth, that among the qualifications needed for the high honour of Presidency of the British Association for the Advancement of Science that of being old was becoming more and more dominant. He who is now attempting to speak to you feels that he is rapidly earning that distinction. But the Association itself is older than its President; it has seen pass away the men who, wise in their generation, met at York on Sept. 27th, 1831, to found it; it has seen other great men who in bygone years served it as Presidents or otherwise helped it on sink one after another into the grave. Each year, indeed, when it plants its flag as a signal of its yearly meeting, that flag floats half-mast high in token of the great losses which the passing year has brought. This year is no exception; the losses, indeed, are perhaps unwontedly heavy. I will not attempt to call over the sad roll-call; but I must say a word about one who was above most others a faithful and zealous friend of the Association. Sir Douglas Galton joined the Association in 1860. From 1871 to 1895, as one of the general secretaries, he bore, and bore to the great good of the Association, a large share of the burden of the Association's work. How great that share was is perhaps especially known to the many men, among whom I am proud to count myself, who during his long term of office served in succession with him as brother general secretary. In 1895 at Ipswich he left the post of general secretary, but only to become President. So long and so constantly did he labour for the good of the Association that he seemed to be an integral part of it, and meeting as we do to-day, and as we henceforward must do, without Sir Douglas Galton we feel something greatly missing. This year perhaps even more than in other years we could have wished him to be among us, for to-day the Association may look with joy, not unmixed with pride, on the realisation of a project in forwarding which it has had a conspicuous share, on the commencement of an undertaking which is not only a great thing in itself but which, we trust, is the beginning of still greater things to come. And the share which the Association has had in this was largely Sir Douglas Galton's doing. In his address as President of Section A, at the meeting of the Association at Cardiff in 1891, Professor Oliver Lodge expounded with pregnant words how urgently, not pure science only, but industry and the constructive arts—for the interests of these are ever at bottom the same—needed the aid of some national establishment for the prosecution of prolonged and costly physical researches which private enterprise could carry out in a lame fashion only, if at all. Professor Lodge's words found an echo in many men's minds, but the response was for a long while in men's minds only. In 1895 Sir Douglas Galton, having previously made a personal study of an institution analogous to the one desired—namely, the Reichsanstalt at Berlin—seized the opportunity offered him as President of the Association at Ipswich to insist, with the authority not only of the head for the time being of a great scientific body, but also of one who himself knew the ways and wants at once of science and of practical life, that the thing which Professor Lodge and others had hoped for was a thing which could be done, and ought to be done at once. And now to-day we can say it has been done. The National Physical Laboratory has been founded. The address at Ipswich marked the beginning of an organised effort which has at last been crowned with success. A feeling of sadness cannot but come over us when we think that Sir Douglas Galton was not spared to see the formal completion of the scheme whose birth he did so much to help and which, to his last days, he aided in more ways than one. It is the old story—the good which men do lives after them.

Still older than the Association is this nineteenth century, now swiftly drawing to its close. Though the century itself has yet some 16 months to run this is the last meeting of the British Association which will use the numbers 1800 to mark its date. The eyes of the young look ever forward; they take little heed of the short though ever-lengthening fragment of life which lies behind them; they are wholly bent on that which is to come. The eyes of the aged turn wistfully again and again to the past; as the old glide down the inevitable slope their present becomes a living over again the life which has gone before, and the future takes on the shape of a brief lengthening of the past. May I this evening venture to give rein to the impulses of advancing years? May I, at this last meeting of the Association in the eighteen hundreds, dare to dwell for a while upon the past and to call to mind a few of the changes which have taken place in the world since those autumn days in which men were saying to each other that the last of the seventeen hundreds was drawing towards its end?

Dover in the year of our Lord seventeen hundred and ninety-nine was in many ways unlike the Dover of to-day. On moonless nights men groped their way in its narrow streets by the help of swinging lanterns and smoky torches, for no lamps lit the ways. By day the light of the sun struggled into the houses through narrow panes of blurred glass. Though the town then, as now, was one of the chief portals to and from the countries beyond the seas the means of travel were scanty and dear, available for the most part to the rich alone and for all beset with discomfort and risk. Slow and uncertain was the carriage of goods and the news of the world outside came to the town—though it from its position learnt more than most towns—tardily, fitfully, and often falsely. The people of Dover sat then much in dimness, if not in darkness, and lived in large measure on themselves. They who study the phenomena of living beings tell us that light is the great stimulus of life and that the fulness of the life of a being or of any of its members may be measured by the variety, the swiftness, and the certainty of the means by which it is in touch with its surroundings. Judged from this standpoint life at Dover then, as indeed elsewhere, must have fallen far short of the life of to-day. The same study of living beings, however, teaches us that while from one point of view the environment seems to mould the organism, from another point the organism seems to be master of its environment. Going behind the change of circumstances we may raise the question, the old question, Was life in its essence worth more then than now? Has there been a real advance? Let me at once relieve your minds by saying that I propose to leave this question in the main unanswered. It may be, or it may not be, that man's grasp of the beautiful and of the good if not looser is not firmer than it was 100 years ago. It may be, or it may not be, that man is no nearer to absolute truth, to seeing things as they really are, than he was then. I will merely ask you to consider with me for a few minutes how far and in what ways man's laying hold of that aspect of or part of truth which we call natural knowledge or sometimes science differed in 1799 from what it is to-day, and whether that change must not be accounted a real advance, a real improvement in man. I do not propose to weary you by what in my hands would be the rash effort of attempting a survey of all the scientific results of the nineteenth century. It will be enough if for a little while I dwell on some few of the salient features distinguishing the way in which we nowadays look upon, and during the coming week shall speak of, the works of Nature around us—though those works themselves, save for the slight shifting involved in a secular change, remain exactly the same—from the way in which they were looked upon and might have been spoken of at a gathering of philosophers at Dover in 1799. And I ask your leave to do so.

In the philosophy of the ancients earth, fire, air, and water were called "the elements." It was thought, and rightly thought, that a knowledge of them and of their attributes was a necessary basis of a knowledge of the ways of Nature. Translated into modern language, a knowledge of these "elements" of old means a knowledge of the composition of the atmosphere, of water, and of all the other things which we call matter, as well as a knowledge of the general properties of gases, liquids, and solids, and of the nature and effects of combustion. Of all these things our

knowledge to-day is large and exact and, though ever enlarging, in some respects complete. When did that knowledge begin to become exact?

To-day the children in our schools know that the air which wraps round the globe is not a single thing, but is made up of two things, oxygen and nitrogen,[1] mingled together. They know, again, that water is not a single thing, but the product of two things, oxygen and hydrogen, joined together. They know that when the air makes the fire burn and gives the animal life it is the oxygen in it which does the work. They know that all round them things are undergoing that union with oxygen which we call oxidation and that oxidation is the ordinary source of heat and light. Let me ask you to picture to yourselves what confusion there would be to-morrow, not only in the discussions at the sectional meetings of our Association, but in the world at large, if it should happen that in the coming night some destroying touch should wither up certain tender structures in all our brains and wipe out from our memories all traces of the ideas which cluster in our minds around the verbal tokens, oxygen and oxidation. How could any of us, not the so-called man of science alone, but even the man of business and the man of pleasure, go about his ways lacking those ideas? Yet those ideas were in 1799 lacking to all but a few.

Although in the third quarter of the seventeenth century the light of truth about oxidation and combustion had flashed out in the writings of John Mayow it came as a flash only and died away as soon as it had come. For the rest of that century and for the greater part of the next philosophers stumbled about in darkness, misled for the most of the time by the phantom conception which they called "phlogiston." It was not until the end of the third quarter of the eighteenth century that the new light which has burned steadily ever since lit up the minds of the men of science. The light came at nearly the same time from England and from France. Rounding off the sharp corners of controversy and joining, as we may fitly do to day, the two countries as twin bearers of a common crown, we may say that we owe the truth to Cavendish, to Lavoisier, and to Priestley. If it was Priestley who was the first to demonstrate the existence of what we now call oxygen, it is to Lavoisier we owe the true conception of the nature of oxidation and the clear exposition of the full meaning of Priestley's discovery, while the knowledge of the composition of water, the necessary complement of the knowledge of oxygen, came to us through Cavendish and, we may perhaps add, through Watt. The date of Priestley's discovery of oxygen is 1774, Lavoisier's classic memoir "on the nature of the principle which enters into combination with metals during calcination" appeared in 1775, and Cavendish's paper on the composition of water did not see the light until 1784. During the last quarter of the eighteenth century this new idea of oxygen and oxidation was struggling into existence. How new was the idea is illustrated by the fact that Lavoisier himself at first spoke of that which he was afterwards—namely, in 1778—led to call oxygen, the name by which it has since been known, as "the principle which enters into combination." What difficulties its acceptance met with is illustrated by the fact that Priestley himself refused to the end of his life to grasp the true bearings of the discovery which he had made. In the year 1799 the knowledge of oxygen, of the nature of water and of air, and indeed the true conception of chemical composition and chemical change, was hardly more than beginning to be, and the century had to pass wholly away before the next great chemical idea, which we know by the name of the atomic theory of John Dalton, was made known. We have only to read the scientific literature of the time to recognise that a truth which is now not only woven as a master-thread into all our scientific conceptions, but even enters largely into the everyday talk and thoughts of educated people, was a hundred years ago struggling into existence among the philosophers themselves. It was all but absolutely unknown to the large world outside those select few.

If there be one word of science which is writ large on the life of the present time it is the word "electricity"; it is, I take it, writ larger than any other word. The knowledge which it denotes has carried its practical results far and wide into our daily life, while the theoretical conceptions which it signifies pierce deep into the nature of things. We are to-day proud, and justly proud, both of the material triumphs and of the intellectual gains which it has brought us and we are full of even larger hopes of it in the future. At what time did this bright child of the nineteenth century have its birth? He who listened to the small group of philosophers of Dover, who in 1799 might have discoursed of natural knowledge, would perhaps have heard much of electric machines, of electric sparks, of the electric fluid, and even of positive and negative electricity, for frictional electricity had long been known and even carefully studied. Probably one or more of the group, dwelling on the observations which Galvani, an Italian, had made known some 20 years before, developed views on the connexion of electricity with the phenomena of living bodies. Possibly one of them was exciting the rest by telling how he had just heard that a professor at Pavia, one Volta, had discovered that electricity could be produced, not only by rubbing together particular bodies, but by the simple contact of two metals, and had thereby explained Galvani's remarkable results. For, indeed, as we shall hear from Professor Fleming, it was in that very year, 1799, that electricity as we now know it took its birth. It was then that Volta brought to light the apparently simple truths out of which so much has sprung. The world, it is true, had to wait for yet some 20 years before both the practical and the theoretic worth of Volta's discovery became truly pregnant under the fertilising influence of another discovery. The loadstone and magnetic virtues had, like the electrifying power of rubbed amber, long been an old story. But, save for the compass, not much had come from it. And even Volta's discovery might have long remained relatively barren had it been left to itself. When, however, in 1819, Oersted made known his remarkable observations on the relations of electricity to magnetism he made the contact needed for the flow of a new current of ideas. And it is perhaps not too much to say that those ideas, developing during the years of the rest of the century with an ever-accelerating swiftness, have wholly changed man's material relations to the circumstances of life and at the same time carried him far in his knowledge of the nature of things.

Of all the various branches of science, none perhaps is to-day, none for these many years past has been, so well known to, even if not understanded by, most people as that of geology. Its practical lessons have brought wealth to many; its fairy tales have brought delight to more; and round it hovers the charm of danger, for the conclusions to which it leads touch on the nature of man's beginning. In 1799 the science of geology as we now know it was struggling into birth. There had been from of old cosmogonies, theories as to how the world had taken shape out of primæval chaos. In that fresh spirit which marked the zealous search after natural knowledge pursued in the middle and latter part of the seventeenth century the brilliant Stenson in Italy and Hooke in our own country had laid hold of some of the problems presented by fossil remains, and Woodward, with others, had laboured in the same field. In the eighteenth century, especially in its latter half, men's minds were busy about the physical agencies determining or modifying the features of the earth's crust; water and fire, subsidence from a primæval ocean and transformation by outbursts of the central heat, Neptune and Pluto, were being appealed to, by Werner on the one hand, and by Desmarest on the other, in explanation of the earth's phenomena. The way was being prepared, theories and views were abundant, and many sound observations had been made, and yet the science of geology, properly so called, the exact and proved knowledge of the successive phases of the world's life, may be said to date from the closing years of the eighteenth century. In 1783 James Hutton put forward in a brief memoir his "Theory of the Earth," which in 1795, two years before his death, he expanded into a book; but his ideas failed to lay hold of men's minds until the century had passed away, when, in 1802, they found an able expositor in John Playfair. The very same year that Hutton published his theory Cuvier came to Paris and almost forthwith began, with Brongniart, his immortal researches into the fossils of Paris and its neighbourhood. And four years later, in the year 1799 itself, William Smith's tabular list of strata and fossils saw the light. It is, I believe, not too much to say that out of these geology as we now know it sprang. It was thus in the closing years of the eighteenth century that was begun the work which the nineteenth century has carried forward to such great results. But at that time only the select few had grasped the truth and even they only the

[1] Some may already know that there is at least a third thing—argon.

beginning of it. Outside the narrow circle the thoughts, even of the educated, about the history of the globe were bounded by the story of the Deluge—though the story was often told in a strange fashion—or were guided by fantastic views of the plastic forces of a sportive Nature.

In another branch of science, in that which deals with the problems presented by living beings, the thoughts of men in 1799 were also very different from the thoughts of men to-day. It is a very old quest, the quest after the knowledge of the nature of living beings, one of the earliest on which man set out, for it promised to lead him to a knowledge of himself, a promise which perhaps is still before us, but the fulfilment of which is as yet far off. As time has gone on the pursuit of natural knowledge has seemed to lead man away from himself into the furthermost parts of the universe and into secret workings of Nature in which he appears to be of little or no account; and his knowledge of the nature of living things and so of his own nature has advanced slowly, waiting till the progress of other branches of natural knowledge can bring it aid. Yet in the past 100 years the biologic sciences, as we now call them, have marched rapidly onward.

We may look upon a living body as a machine doing work in accordance with certain laws and may seek to trace out the working of the inner wheels, how these raise up the lifeless dust into living matter and let the living matter fall away again into dust, giving out movement and heat. Or we may look upon the individual life as a link in a long chain joining something which went before to something about to come, a chain whose beginning lies hid in the farthest past, and may seek to know the ties which bind one life to another. As we call up to view the long series of living forms, living now or flitting like shadows on the screen of the past, we may strive to lay hold of the influences which fashion the garment of life. Whether the problems of life are looked upon from the one point of view or the other we to-day, not biologists only, but all of us, have gained a knowledge hidden even from the philosophers a hundred years ago.

Of the problems presented by the living body viewed as a machine some may be spoken of as mechanical, others as physical, and yet others as chemical, while some are, apparently at least, none of these. In the seventeenth century William Harvey, laying hold of the central mechanism of the blood-stream, opened up a path of inquiry which his own age and the century which followed trod with marked success. The knowledge of the mechanics of the animal and of the plant advanced apace; but the physical and chemical problems had yet to wait. The eighteenth century, it is true, had its physics and its chemistry; but in relation at least to the problems of the living being a chemistry which knew not oxygen and a physics which knew not the electricity of chemical action were of little avail. The philosopher of 1799 when he discussed the functions of the animal or of the plant involving chemical changes was fain for the most part, as were his predecessors in the century before, to have recourse to such vague terms as "fermentation" and the like; to-day our treatises on physiology are largely made up of precise and exact expositions of the play of physical agencies and chemical bodies in the living organism. He made use of the words "vital force" or "vital principle" not as an occasional, but as a common, explanation of the phenomena of the living body. During the present century, especially during its latter half, the idea embodied in those words has been driven away from one seat after another; if we use it now when we are dealing with the chemical and physical events of life we use it with reluctance, as a *deus ex machinâ* to be appealed to only when everything else has failed.

Some of the problems—and those, perhaps, the chief problems—of the living body have to be solved neither by physical nor by chemical methods, but by methods of their own. Such are the problems of the nervous system. In respect to these the men of 1799 were on the threshold of a pregnant discovery. During the latter part of the present century, and especially during its last quarter, the analysis of the mysterious processes in the nervous system, and especially in the brain, which issue as feeling, thought, and the power to move, has been pushed forward with a success conspicuous in its practical and full of promise in its theoretical gains. That analysis may be briefly described as a following up of threads. We now know that what takes place along a tiny thread which we call a nerve-fibre differs from that which takes place along its fellow threads, that differing nervous impulses travel along different nerve-fibres, and that nervous and psychical events are the outcome of the clashing of nervous impulses as they sweep along the closely-woven web of living threads of which the brain is made. We have learnt by experiment and by observation that the pattern of the web determines the play of the impulses, and we can already explain many of the obscure problems, not only of nervous disease, but of nervous life, by an analysis which is a tracking out the devious and linked paths of nervous threads. The very beginning of this analysis was unknown in 1799. Men knew that nerves were the agents of feeling and of the movements of muscles; they had learnt much about what this part or that part of the brain could do; but they did not know that one nerve fibre differed from another in the very essence of its work. It was just about the end of the past century or the beginning of the present one that an English surgeon began to ponder over a conception which, however, he did not make known until some years later, and which did not gain complete demonstration and full acceptance until still more years had passed away. It was in 1811, in a tiny pamphlet published privately, that Charles Bell put forward his "New Idea" that the nervous system was constructed on the principle that "the nerves are not single nerves possessing various powers, but bundles of different nerves, whose filaments are united for the convenience of distribution, but which are distinct in office as they are in origin from the brain." Our present knowledge of the nervous system is to a large extent only an exemplification and expansion of Charles Bell's "New Idea" and has its origin in that.

If we pass from the problems of the living organism viewed as a machine to those presented by the varied features of the different creatures who have lived or who still live on the earth we at once call to mind that the middle years of the present century mark an epoch in biologic thought such as never came before, for it was then that Charles Darwin gave to the world the "Origin of Species." That work, however, with all the far-reaching effects which it has had, could have had little or no effect, or, rather, could not have come into existence, had not the earlier half of the century been in travail preparing for its coming. For the germinal idea of Darwin appeals, as to witnesses, to the results of two lines of biologic investigation which were almost unknown to the men of the eighteenth century. To one of these lines I have already referred. Darwin, as we know, appealed to the geological record, and we also know how that record, imperfect as it was then, and imperfect as it must always remain, has since his time yielded the most striking proofs of at least one part of his general conception. In 1799 there was, as we have seen, no geological record at all. Of the other line I must say a few words.

To-day the merest beginner in biologic study, or even that exemplar of acquaintance without knowledge, the general reader, is aware that every living being, even man himself, begins its independent existence as a tiny ball, of which we can, even acknowledging to the full the limits of the optical analysis at our command, assert with confidence that in structure, using that word in its ordinary sense, it is in all cases absolutely simple. It is equally well known that the features of form which supply the characters of a grown-up living being, all the many and varied features of even the most complex organism, are reached as the goal of a road, at times a long road, of successive changes; that the life of every being, from the ovum to its full estate, is a series of shifting scenes, which come and go, sometimes changing abruptly, sometimes melting the one into the other, like dissolving views, all so ordained that often the final shape with which the creature seems to begin, or is said to begin, its life in the world is the outcome of many shapes, clothed with which it in turn has lived many lives before its seeming birth.

All or nearly all the exact knowledge of the laboured way in which each living creature puts on its proper shape and structure is the heritage of the present century. Although the way in which the chick is moulded in the egg was not wholly unknown even to the ancients, and in later years had been told, first in the sixteenth century by Fabricius, then in the seventeenth century in a more clear and striking manner by the great Italian naturalist Malphigi, the teaching thus offered had been neglected or misinterpreted. At the close of the eighteenth century the dominant view was that in the making of a creature out of the egg there was no putting on of wholly new parts, no epigenesis. It was taught that the

entire creature lay hidden in the egg, hidden by reason of the very transparency of its substance, lay ready-made but folded up, as it were, and that the process of development within the egg or within the womb was a mere unfolding, a simple evolution. Nor did men shrink from accepting the logical outcome of such a view—namely, that within the unborn creature lay itself in like manner, hidden and folded up, its offspring also, and within that again its offspring in turn, after the fashion of a cluster of ivory balls carved by Chinese hands, one within the other. This was no fantastic view put forward by an imaginative dreamer; it was seriously held by sober men, even by men like the illustrious Haller, in spite of their recognising that as the chick grew in the egg some changes of form took place. Though so early as the middle of the eighteenth century Friedrich Caspar Wolff and later others had strenuously opposed such a view it held its own, not only to the close of the century, but far on into the next. It was not until a quarter of the present century had been added to the past that von Baer made known the results of researches which once and for all swept away the old view. He and others working after him made it clear that each individual puts on its final form and structure, not by an unfolding of pre-existing hidden features, but by the formation of new parts through the continued differentiation of a primitively simple material. It was also made clear that the successive changes which the embryo undergoes in its progress from the ovum to maturity are the expression of morphologic laws, that the progress is one from the general to the special, and that the shifting scenes of embryonic life are hints and tokens of lives lived by ancestors in times long past.

If we wish to measure how far off in biologic thought the end of the last century stands, not only from the end but even from the middle of this one, we may imagine Darwin striving to write the "Origin of Species" in 1799. We may fancy him being told by philosophers explaining how one group of living beings differed from another group because all its members and all their ancestors came into existence at one stroke when the first-born progenitor of the race, within which all the rest were folded up, stood forth as the result of a creative act. We may fancy him listening to a debate between the philosopher who maintained that all the fossils strewn in the earth were the remains of animals or plants churned up in the turmoil of a violent universal flood, and dropped in their places as the waters went away, and him who argued that such were not really the "spoils of living creatures," but the products of some playful plastic power which out of the superabundance of its energy fashioned here and there the lifeless earth into forms which imitated, but only imitated, those of living things. Could he amid such surroundings by any flight of genius have beat his way to the conception for which his name will ever be known?

Here I may well turn away from the past. It is not my purpose nor, as I have said, am I fitted, nor is this perhaps the place, to tell even in outline the tale of the work of science in the nineteenth century. I am content to have pointed out that the two great sciences of chemistry and geology took their birth, or at least began to stand alone, at the close of the last century, and have grown to be what we know them now within about 100 years, and that the study of living beings has within the same time been so transformed as to be to-day something wholly different from what it was in 1799; and, indeed, to say more would be to repeat almost the same story about other things. If our present knowledge of electricity is essentially the child of the nineteenth century, so also is our present knowledge of many other branches of physics. And those most ancient forms of exact knowledge, the knowledge of numbers and of the heavens, whose beginning is lost in the remote past, have, with all other kinds of natural knowledge, moved onward during the whole of the 100 years with a speed which is ever increasing. I have said, I trust, enough to justify the statement that in respect to natural knowledge a great gulf lies between 1799 and 1899. That gulf, moreover, is a twofold one: not only has natural knowledge been increased, but men have run to and fro spreading it as they go. Not only have the few driven far back round the full circle of natural knowledge the dark clouds of the unknown which wrap us all about, but also the many walk in the zone of light thus increasingly gained. If it be true that the few to-day are, in respect to natural knowledge, far removed from the few of those days, it is also true that nearly all of which the few alone knew then, and much which they did not know, has now become the common knowledge of the many. What, however, I may venture to insist upon here is that the difference in respect to natural knowledge, whatever be the case with other differences between then and now, is undoubtedly a difference which means progress. The span between the science of that time and the science of to-day is beyond all question a great stride onwards. We may say this, but we must say it without boasting. For the very story of the past which tells of the triumphs of science bids the man of science put away from him all thoughts of vainglory. And that by many tokens.

Whoever, working at any scientific problem, has occasion to study the inquiries into the same problem made by some fellow-worker in the years long gone by, comes away from that study humbled by one or other of two different thoughts. On the one hand, he may find, when he has translated the language of the past into the phraseology of to-day, how near was his forerunner of old to the conception which he thought, with pride, was all his own, not only so true but so new. On the other hand, if the ideas of the investigator of old, viewed in the light of modern knowledge, are found to be so wide of the mark as to seem absurd, the smile which begins to play upon the lips of the modern is checked by the thought, Will the ideas which I am now putting forth, and which I think explain so clearly, so fully, the problem in hand, seem to some worker in the far future as wrong and as fantastic as do these of my forerunner to me? In either case his personal pride is checked. Further, there is written clearly on each page of the history of science, in characters which cannot be overlooked, the lesson that no scientific truth is born anew, coming by itself and of itself. Each new truth is always the offspring of something which has gone before, becoming in turn the parent of something coming after. In this aspect the man of science is unlike, or seems to be unlike, the poet and the artist. The poet is born, not made; he rises up, no man knowing his beginnings; when he goes away, though men after him may sing his songs for centuries, he himself goes away wholly, having taken with him his mantle, for this he can give to none other. The man of science is not thus creative; he is created. His work, however great it be, is not wholly his own; it is in part the outcome of the work of men who have gone before. Again and again a conception which has made a name great has come not so much by the man's own effort as out of the fulness of time. Again and again we may read in the words of some man of old the outlines of an idea which in later days has shone forth as a great acknowledged truth. From the mouth of the man of old the idea dropped barren, fruitless; the world was not ready for it and heeded it not; the concomitant and abutting truths which could give it power to work were wanting. Coming back again in later days the same idea found the world awaiting it; things were in travail preparing for it, and someone, seizing the right moment to put it forth again, leapt into fame. It is not so much the men of science who make science as some spirit which, born of the truths already won, drives the man of science onward and uses him to win new truths in turn.

It is because each man of science is not his own master, but one of many obedient servants of an impulse which was at work long before him, and will work long after him, that in science there is no falling back. In respect to other things there may be times of darkness and times of light, there may be risings, decadences, and revivals. In science there is only progress. The path may not be always a straight line, there may be swerving to this side and to that, ideas may seem to return again and again to the same point of the intellectual compass; but it will always be found that they have reached a higher level—they have moved not in a circle, but in a spiral. Moreover, science is not fashioned as is a house, by putting brick to brick, that which is once put remaining as it was put to the end. The growth of science is that of a living being. As in the embryo phase follows phase, and each member of the body puts on in succession different appearances, though all the while the same member, so a scientific conception of one age seems to differ from that of a following age, though it is the same one in the process of being made; and as the dim outlines of the early embryo become, as the being grows more distinct and sharp, like a picture on a screen brought more and more into focus, so the dim gropings and searchings of the men of science of old are by repeated approximations wrought into the clear and exact conclusions of later times.

The story of natural knowledge, of science, in the

nineteenth century, as indeed in preceding centuries, is, I repeat, a story of continued progress. There is in it not so much as a hint of falling back, not even of standing still. What is gained by scientific inquiry is gained for ever; it may be added to, it may seem to be covered up, but it can never be taken away. Confident that the progress will go on we cannot help peering into the years to come and straining our eyes to foresee what science will become and what it will do as they roll on. While we do so the thought must come to us, Will all the increasing knowledge of nature avail only to change the ways of man—will it have no effect on man himself? The material good which mankind has gained and is gaining through the advance of science is so imposing as to be obvious to every one, and the praises of this aspect of science are to be found in the mouths of all. Beyond all doubt science has greatly lessened and has markedly narrowed hardship and suffering; beyond all doubt science has largely increased and has widely diffused ease and comfort. The appliances of science have, as it were, covered with a soft cushion the rough places of life, and that not for the rich only but also for the poor. So abundant and so prominent are the material benefits of science that in the eyes of many these seem to be the only benefits which she brings. She is often spoken of as if she were useful and nothing more, as if her work were only to administer to the material wants of man. Is this so? We may begin to doubt it when we reflect that the triumphs of science which bring these material advantages are in their very nature intellectual triumphs. The increasing benefits brought by science are the results of man's increasing mastery over Nature and that mastery is increasingly a mastery of mind; it is an increasing power to use the forces of what we call inanimate nature in place of the force of his own or other creatures' bodies; it is an increasing use of mind in place of muscle.

Is it to be thought that that which has brought the mind so greatly into play has had no effect on the mind itself? Is that part of the mind which works out scientific truths a mere slavish machine producing results it knows not how, having no part in the good which in its working it brings forth?

What are the qualities, the features of that scientific mind which has wrought, and is working, such great changes in man's relation to Nature? In seeking an answer to this question we have not to inquire into the attributes of genius. Though much of the progress of science seems to take on the form of a series of great steps, each made by some great man, the distinction in science between the great discoverer and the humble worker is one of degree only, not of kind. As I was urging just now, the greatness of many great names in science is often, in large part, the greatness of occasion, not of absolute power. The qualities which guide one man to a small truth silently taking its place among its fellows, as these go to make up progress, are at bottom the same as those by which another man is led to something of which the whole world rings. The features of the fruitful scientific mind are in the main three.

In the first place, above all other things, his nature must be one which vibrates in unison with that of which he is in search; the seeker after truth must himself be truthful—truthful with the truthfulness of Nature. For the truthfulness of Nature is not wholly the same as that which man sometimes calls truthfulness. It is far more imperious, far more exacting. Man, unscientific man, is often content with "the nearly" and "the almost." Nature never is. It is not her way to call the same two things which differ, though the difference may be measured by less than the thousandth of a milligramme or of a millimetre or by any other like standard of minuteness. And the man who, carrying the ways of the world into the domain of science, thinks that he may treat Nature's differences in any other way than she treats them herself, will find that she resents his conduct; if he in carelessness or in disdain overlooks the minute difference which she holds out to him as a signal to guide him in his search, the projecting tip, as it were, of some buried treasure, he is bound to go astray and the more strenuously he struggles on the farther will find himself from his true goal.

In the second place, he must be alert of mind. Nature is ever making signs to us, she is ever whispering to us the beginning of her secrets; the scientific man must be ever on the watch, ready at once to lay hold of Nature's hint, however small, to listen to her whisper, however low.

In the third place, scientific inquiry, though it be preeminently an intellectual effort, has need of the moral quality of courage—not so much the courage which helps a man to face a sudden difficulty as the courage of steadfast endurance. Almost every inquiry, certainly every prolonged inquiry, sooner or later goes wrong. The path, at first so straight and clear, grows crooked and gets blocked; the hope and enthusiasm, or even the jaunty ease, with which the inquirer set out leave him and he falls into a slough of despond. That is the critical moment calling for courage. Struggling through the slough he will find on the other side the wicket-gate opening up the real path; losing heart he will turn back and add one more stone to the great cairn of the unaccomplished.

But, I hear someone say, these qualities are not the peculiar attributes of the man of science: they may be recognised as belonging to almost everyone who has commanded or deserved success whatever may have been his walk of life. That is so. That is exactly what I would desire to insist upon, that the men of science have no peculiar virtues, no special powers. They are ordinary men, their characters are common, even commonplace. Science, as Huxley said, is organised common sense, and men of science are common men, drilled in the ways of common sense. For their life has this feature. Though in themselves they are no stronger, no better than other men, they possess a strength which, as I just now urged, is not their own but is that of the science whose servants they are. Even in his apprenticeship, the scientific inquirer, while learning what has been done before his time, if he learns it aright so learns it that what is known may serve him not only as a vantage ground whence to push off into the unknown, but also as a compass to guide him in his course. And when fitted for his work he enters on inquiry itself, what a zealous anxious guide, what a strict and, because strict, helpful schoolmistress does Nature make herself to him! Under her care every inquiry, whether it bring the inquirer to a happy issue or seem to end in nought, trains him for the next effort. She so orders her ways that each act of obedience to her makes the next act easier for him and step by step she leads him on towards that perfect obedience which is complete mastery. Indeed, when we reflect on the potency of the discipline of scientific inquiry we cease to wonder at the progress of scientific knowledge. The results actually gained seem to fall so far short of what under such guidance might have been expected to have been gathered in that we are fain to conclude that science has called to follow her, for the most part, the poor in intellect and the wayward in spirit. Had she called to her service the many acute minds who have wasted their strength struggling in vain to solve hopeless problems, or who have turned their energies to things other than the increase of knowledge; had she called to her service the many just men who have walked straight without the need of a rod to guide them, how much greater than it has been would have been the progress of science and how many false teachings would the world have been spared! To men of science themselves, when they consider their favoured lot, the achievements of the past should serve not as a boast, but as a reproach.

If there be any truth in what I have been urging, that the pursuit of scientific inquiry is itself a training of special potency, giving strength to the feeble and keeping in the path those who are inclined to stray, it is obvious that the material gains of science, great as they may be, do not make up all the good which science brings or may bring to man. We especially, perhaps, in these later days, through the rapid development of the physical sciences, are too apt to dwell on the material gains alone. As a child in its infancy looks upon its mother only as a giver of good things and does not learn till in after days how she was also showing her love by carefully training it in the way it should go, so we, too, have thought too much of the gifts of science, overlooking her power to guide.

Man does not live by bread alone, and science brings him more than bread. It is a great thing to make two blades of grass grow where before one alone grew; but it is no less great a thing to help a man to come to a just conclusion on the questions with which he has to deal. We may claim for science that while she is doing the one she may be so used as to do the other also. The dictum just quoted, that science is organised common sense, may be read as meaning that the common problems of life which common people have to solve are to be solved by the same methods by which the man of science solves his special problems. It follows that the training which does so much for him may be looked to as promising to do much for them. Such aid can come from

science on two conditions only. In the first place, this her influence must be acknowledged; she must be duly recognised as a teacher no less than as a hewer of wood and a drawer of water. And the pursuit of science must be followed not by the professional few only but, at least in such measure as will ensure the influence of example, by the many. But this latter point I need not urge before this great Association, whose chief object during more than half a century has been to bring within the fold of science all who would answer to the call. In the second place, it must be understood that the training to be looked for from science is the outcome not of the accumulation of scientific knowledge but of the practice of scientific inquiry. Man may have at his fingers' ends all the accomplished results and all the current opinions of any one or of all the branches of science and yet remain wholly unscientific in mind; but no one can have carried out even the humblest research without the spirit of science in some measure resting upon him. And that spirit may in part be caught even without entering upon an actual investigation in search of a new truth. The learner may be led to old truths, even the oldest, in more ways than one. He may be brought abruptly to a truth in its finished form, coming straight to it like a thief climbing over the wall; and the hurry and press of modern life tempt many to adopt this quicker way. Or he may be more slowly guided along the path by which the truth was reached by him who first laid hold of it. It is by this latter way of learning the truth, and by this alone, that the learner may hope to catch something at least of the spirit of the scientific inquirer.

This is not the place, nor have I the wish, to plunge into the turmoil of controversy; but, if there be any truth in what I have been urging, then they are wrong who think that in the schooling of the young science can be used with profit only to train those for whom science will be the means of earning their bread. It may be that from the point of view of the pedagogic art the experience of generations has fashioned out of the older studies of literature an instrument of discipline of unusual power, and that the teaching of science is as yet but a rough tool in unpractised hands. That, however, is not an adequate reason why scope should not be given for science to show the value which we claim for it as an intellectual training fitted for all sorts and conditions of men. Nor need the studies of humanity and literature fear her presence in the schools, for if her friends maintain that that teaching is one-sided, and therefore misleading, which deals with the doings of man only, and is silent about the works of Nature, in the sight of which he and his doings shrink almost to nothing, she herself would be the first to admit that that teaching is equally wrong which deals only with the works of Nature and says nothing about the doings of man, who is, to us at least, Nature's centre.

There is yet another general aspect of science on which I would crave leave to say a word. In that broad field of human life which we call politics, in the struggle not of man with man but of race with race, science works for good. If we look only on the surface it may at first sight seem otherwise. In no branch of science has there during these later years been greater activity and more rapid progress than in that which furnishes the means by which man brings death, suffering, and disaster on his fellow-men. If the healer can look with pride on the increased power which science has given him to alleviate human suffering and ward off the miseries of disease, the destroyer can look with still greater pride on the power which science has given him to sweep away lives and to work desolation and ruin; while the one has slowly been learning to save units, the other has quickly learnt to slay thousands. But, happily, the very greatness of the modern power of destruction is already becoming a bar to its use, and bids fair—may we hope before long?—wholly to put an end to it; in the words of Tacitus, though in another sense, the very preparations for war, through the character which science gives them, make for peace.

Moreover, not in one branch of science only, but in all, there is a deep undercurrent of influence sapping the very foundations of all war. As I have already urged, no feature of scientific inquiry is more marked than the dependence of each step forward on other steps which have been made before. The man of science cannot sit by himself in his own cave weaving out results by his own efforts, unaided by others, heedless of what others have done and are doing. He is but a bit of a great system, a joint in a great machine, and he can only work aright when he is in due touch with his fellow-workers. If his labour is to be what it ought to be, and is to have the weight which it ought to have, he must know what is being done, not by himself, but by others, and by others not of his own land and speaking his tongue only, but also of other lands and of other speech. Hence it comes about that to the man of science the barriers of manners and of speech which pen men into nations become more and more unreal and indistinct. He recognises his fellow-worker, wherever he may live and whatever tongue he may speak, as one who is pushing forward shoulder to shoulder with him towards a common goal, as one whom he is helping and who is helping him. The touch of science makes the whole world kin.

The history of the past gives us many examples of this brotherhood of science. In the revival of learning throughout the sixteenth and seventeenth centuries and some way on into the eighteenth century, the common use of the Latin tongue made intercourse easy. In some respects in those earlier days science was more cosmopolitan than it afterwards became. In spite of the difficulties and hardships of travel the men of science of different lands again and again met each other face to face, heard with their ears, and saw with their eyes what their brethren had to say or to show. The Englishman took the long journey to Italy to study there; the Italian, the Frenchman, and the German wandered from one seat of learning to another; and many a man held a chair in a country not his own. There was help, too, as well as intercourse. The Royal Society of London took upon itself the task of publishing nearly all the works of the great Italian Malpighi, and the brilliant Lavoisier, two years before his own countrymen in their blind fury slew him, received from the same body the highest token which it could give of its esteem.

In these closing years of the nineteenth century this great need of mutual knowledge and of common action felt by men of science of different lands is being manifested in a special way. Though nowadays what is done anywhere is soon known everywhere, the news of a discovery being often flashed over the globe by telegraph, there is an increasing activity in the direction of organisation to promote international meetings and international coöperation. In almost every science inquirers from many lands now gather together at stated intervals in international congresses to discuss matters which they have in common at heart, and go away each one feeling strengthened by having met his brother. The desire that in the struggle to lay bare the secrets of Nature the least waste of human energy should be incurred is leading more and more to the concerted action of nations combining to attack problems the solution of which is difficult and costly. The determination of standards of measurement, magnetic surveys, the solution of great geodetic problems, the mapping of the heavens and of the earth—all these are being carried on by international organisations.

In this and in other countries men's minds have this long while past been greatly moved by the desire to make fresh efforts to pierce the dark secrets of the forbidding Antarctic regions. Belgium has just made a brave single-handed attempt; a private enterprise sailing from these shores is struggling there now, lost for the present to our view; and this year we in England and our brethren in Germany are, thanks to the promised aid of their respective Governments, and no less to private liberality, in which this Association takes its share, able to begin the preparation of carefully organised expeditions. That international amity of which I am speaking is illustrated by the fact that in this country and in that there is not only a great desire, but a firm purpose, to secure the fullest coöperation between the expeditions which will leave the two shores. If in this momentous attempt any rivalry be shown between the two nations it will be for each a rivalry, not in forestalling, but in assisting the other. May I add that if the story of the past may seem to give our nation some claim to the seas as more peculiarly our own that claim bespeaks a duty likewise peculiarly our own to leave no effort untried by which we may plumb the seas' yet unknown depths and trace their yet unknown shores. That claim, if it means anything, means that when nations are joining hands in the dangerous work of exploring the unknown South the larger burden of the task should fall to Britain's share; it means that we in this country should see to it, and see to it at once, that the concerted Antarctic expedition which in some two years or so will leave the shores of Germany, of England, and perhaps of other lands, should, so far as we are concerned, be so equipped and so sustained that the risk of failure and disaster may be made

as small and the hope of being able not merely to snatch a hurried glimpse of lands not yet seen, but to gather in with full hands a rich harvest of the facts which men not of one science only, but of many, long to know as great as possible.

Another international scientific effort demands a word of notice. The need which every inquirer in science feels to know, and to know quickly, what his fellow-worker, wherever on the globe he may be carrying on his work or making known his results, has done or is doing, led some four years back to a proposal for carrying out by international coöperation a complete current index, issued promptly, of the scientific literature of the world. Though much labour in many lands has been spent upon the undertaking the project is not yet an accomplished fact. Nor can this, perhaps, be wondered at when the difficulties of the task are weighed. Difficulties of language, difficulties of driving in one team all the several sciences which, like young horses, wish each to have its head free with leave to go its own way, difficulties, mechanical and financial, of press and post, difficulties raised by existing interests,—these and yet other difficulties are obstacles not easy to be overcome. The most striking and the most encouraging features of the deliberations which have now been going on for three years have been the repeated expressions, coming not from this or that quarter only, but from almost all quarters, of an earnest desire that the effort should succeed, of a sincere belief in the good of international coöperation, and of a willingness to sink as far as possible individual interests for the sake of the common cause. In the face of such a spirit we may surely hope that the many difficulties will ultimately pass out of sight.

Perhaps, however, not the least notable fact of international coöperation in science is the proposal which has been made within the last two years that the leading academies of the world should, by representatives, meet at intervals to discuss questions in which the learned of all lands are interested. A month hence a preliminary meeting of this kind will be held at Wiesbaden; and it is at least probable that the closing year of the nineteenth century in which science has played so great a part may at Paris during the great World's Fair—which every friend, not of science only but of humanity, trusts may not be put aside or even injured through any untoward event, and which promises to be an occasion, not of pleasurable sight-seeing only, but also, by its many international congresses, of international communing in the search for truth—witness the first select Witenagemote of the science of the world.

I make no apology for having thus touched on international coöperation. I should have been wanting had I not done so to the memorable occasion of this meeting. A hundred years ago two great nations were grappling with each other in a fierce struggle which had lasted, with pauses, for many years and was to last for many years to come; war was on every lip and in almost every heart. To-day this meeting has by a common wish been so arranged that those two nations should, in the persons of their men of science, draw as near together as they can, with nothing but the narrow streak of the Channel between them, in order that they may take counsel together on matters in which they have one interest and a common hope. May we not look upon this brotherly meeting as one of many signs that science, though she works in a silent manner and in ways unseen by many, is steadily making for peace?

Looking back, then, in this last year of the eighteen hundreds, on the century which is drawing to its close, while we may see in the history of scientific inquiry much which, telling the man of science of his shortcomings and his weakness, bids him be humble, we also see much, perhaps more, which gives him hope. Hope is indeed one of the watchwords of science. In the latter-day writings of some who know not science much may be read which shows that the writer is losing or has lost hope in the future of mankind. There are not a few of these; their repeated utterances make a sign of the times. Seeing in matters lying outside science few marks of progress and many tokens of decline or of decay, recognising in science its material benefits only, such men have thoughts of despair when they look forward to the times to come. But if there be any truth in what I have attempted to urge to-night, if the intellectual, if the moral influences of science are no less marked than her material benefits, if, moreover, that which she has done is but the earnest of that which she shall do, such men may pluck up courage and gather strength by laying hold of her garment. We men of science at least need not share their views or their fears. Our feet are set, not on the shifting sands of the opinions and of the fancies of the day, but on a solid foundation of verified truth, which by the labours of each succeeding age is made broader and more firm. To us the past is a thing to look back upon, not with regret, not as something which has been lost never to be regained, but with content, as something whose influence is with us still, helping us on our further way. With us, indeed, the past points not to itself but to the future; the golden age is in front of us, not behind us; that which we do know is a lamp whose brightest beams are shed into the unknown before us, showing us how much there is in front and lighting up the way to reach it. We are confident in the advance because, as each one of us feels that any step forward which he may make is not ordered by himself alone and is not the result of his own sole efforts in the present, but is, and that in large measure, the outcome of the labours of others in the past, so each one of us has the sure and certain hope that as the past has helped him so his efforts, be they great or be they small, will be a help to those to come.

A Lecture
ON
THE INCREASE OF CANCER.

Delivered before the Hunterian Society on Oct. 12th, 1899,

BY JOSEPH FRANK PAYNE, M.D. OXON.,
SENIOR PHYSICIAN TO ST. THOMAS'S HOSPITAL.

MR. PRESIDENT AND GENTLEMEN,—It is my first duty to thank you for the honour which you have done me in inviting me to give one of the Hunterian Lectures before this society. In selecting a subject for my address I have tried to find one of general and not merely of special interest. The general interest of cancer is perhaps not so widely recognised by the profession as that of some other diseases, but I hope to show you that its importance is considerable and increasing and may require serious attention.

In speaking of cancer I mean what is called malignant disease generally, including therefore sarcoma, which is comprised in official returns under the head of cancer. To guard against any misapprehension I may say that this distinction is unimportant as regards statistics, since the number of cases of sarcoma is so small compared with those of carcinoma that their inclusion or omission would cause but little difference to the number. But since some kind of definition seems called for in a subject of this kind, I should say that I think of cancer as a general disease apart from the histological peculiarities of the cancerous tumour—a view which was often urged by Sir James Paget, our honoured master in this matter, but is perhaps not sufficiently appreciated. This disease begins at one part of the body (or very rarely at more than one) and extends continuously in that part, or to others by mere contact. Next it may through the mechanical facilities which are afforded by the blood- or by lymph-circulation be transferred to other parts of the body and give rise to secondary foci. In some cases it may be so widely distributed as to produce a sort of generalisation of the disease. In all this I have said nothing more than could be said with equal truth of tubercle or syphilis, or even of pyæmia in a limited sense, but it has taken half a century's work to establish these simple laws in the case of cancer. There are, however, certain peculiarities which distinguish cancer from the diseases just named. It has a peculiarity of beginning in one special kind of tissue—either in surface epithelium, or in secreting epithelium, or in connective tissue, and producing a new growth of that particular kind of tissue. On this account it appears difficult to some pathologists to recognise that it is really a disease.

The analogy of cancer with the specific diseases mentioned above has naturally led to the hypothesis that like the rest this disease is produced by some living cause or micro-organism, but the search for such an organism has

been up to the present time unsuccessful. As regards bacteria there is really little resemblance between their effects and the growth of cancer, since all the reactions produced by bacteria in the body are purely defensive, that is inflammatory, and do not result in the growth of any special kind of tissue. There is more plausibility in supposing the cancer parasite to be an animal organism belonging to the protozoa, but no such organism has been satisfactorily demonstrated. The latest theory—that which attributes cancer to the growth of a blasto-mycete or yeast—seems to me equally to lack demonstration. On the whole the parasitic theory of cancer looks decidedly less promising than it did two or three years ago, and although no one can deny the possibility of a parasite being found, it appears to me personally very doubtful whether this will turn out to be the solution of the problem. But in studying the increase of cancer it is impossible not to speculate about its cause, however little may be precisely known respecting it. We ask: Is the cause one originating in the body or outside? Is the disease ever transmitted from one person to another, either directly or through indirect contagion? or does each person affected acquire it independently from some source of infection in external nature? On the other hand, is the disease, as some suppose, inherited? These questions cannot at present be answered. But perhaps one ought not to avoid giving one's personal opinion of what is probable; and, first, I believe that there is an inherited bias or proclivity towards cancer in certain families; secondly, I think that the cases of supposed direct contagion are so exceedingly rare as to be probably due to coincidence; thirdly, indirect contagion cannot be proved, and in cases where it appears probable the real explanation may be the separate action of the same local cause on the persons affected; and fourthly, the operation of some external local cause of infection is rendered probable by certain facts of geographical and local distribution. The hypothesis of some external cause especially abundant in certain places or even in certain houses would explain many of the facts of the prevalence of cancer, though it does not follow that because it explains the facts it is true. If, however, this were established, cancer would belong to the miasmatic, not to the contagious class of diseases, though it might well be affected by personal habits and constitution or by inherited qualities. Still, we must confess that the existence of such a cause is at present entirely hypothetical.

Before going on to my main topic I must briefly notice one or two other points in the natural history of cancer. 1. Its relation to age. Cancer, as we know, is almost confined to adult life and is chiefly prevalent in the period past the middle age, its frequency in proportion to the number of individuals living increasing up to extreme old age. Different forms of the disease, however, have their maximum frequency at different ages. Sarcoma, on the other hand, is common in early life—sometimes so early as to appear congenital. The few deaths in early life attributed in statistics to cancer are doubtless mostly due to sarcoma. Table I., kindly supplied to me by Dr. Tatham for another purpose, shows the prevalence of cancer at different ages, together with the corresponding facts for phthisis. 2. In relation to sex. It is well known that cancer is commoner in females than in males owing to the greater liability of the former to cancer of the sexual organs. In England this difference is becoming less in consequence of the more rapid increase of cancer in males than in females, but such is not the case to the same extent in all countries. 3. In regard to social relations. It is generally believed that cancer is relatively more common in the upper classes of society than in the lower. Very likely this is the case, but no accurate proof can be given unless we know the numerical proportions of the different classes of society.

TABLE I.—*Mortality from Cancer and from Phthisis in England and Wales, 1881–90.*

Ages.	Cancer.		Phthisis.	
	Deaths.	Rate per million.	Deaths.	Rate per million.
All ages	161,920	589	473,968	1,724
Under 5 years	712	20	13,950	36
5–10 years	332	10	9,502	290
10–15 ,, ...	332	11	15,680	521
15–20 ,, ...	563	20	42,471	1,545
20–25 ,, ...	859	35	57,802	2,324
25–35 ,, ...	5,221	128	118,508	2,901
35–45 ,, ...	18,315	584	98,178	3,132
45–55 ,, ...	36,069	1,545	63,913	2,737
55–65 ,, ...	45,761	2,868	34,606	2,169
65–75 ,, ...	38,318	4,160	12,485	1,355
75 years and upwards ...	15,438	4,296	1,873	521

I now proceed to the main subject of my lecture—namely, the increase of cancer as recorded in statistics. Is it real or, as some have supposed, only apparent, the numerical increase being due to errors or imperfections in the registration of disease? First, we have to consider the numbers given in the statistics issued by registration authorities in different countries, and especially those issued by the Registrar-General for England. We cannot go further back than about half a century ago, when the English system of registration was in working order, though not so complete as now, and, as remarked by Hirsch in the first edition of his "Handbook of Historical and Geographical Pathology," published in 1863, supplied at the time almost the only trustworthy statistics accessible. According to the earliest reports the death-rate from cancer in 1840 was 177 per 1,000,000 and in 1850 it was 279 per 1,000,000, but as the accuracy of registration in those days may be questioned I will begin at the year 1851, when the system of nomenclature was altered and I have put down the returns issued by the Registrar-General since that year.[1] Table II. shows the rates of

TABLE II.—*Mean Annual Death-rate from Cancer per 1,000,000 Persons Living at successive Age-periods, 1851–60 to 1881–90.* (*England.*)

—	All ages.	0–	5–	10–	15–	20–	25–	35–	45	55–	65–	75
1851–60...	317	22	9	9	17	28	103	389	0	1410	1960	2083
1861–70...	387	13	7	7	17	29	113	445	1048	1768	2360	2566
1871–80...	473	12	7	7	15	27	124	525	1255	2200	3092	3283
1881–90...	589	20	10	11	20	35	128	584	1545	2868	4160	4295
Increase per cent.	86	—	11	18	18	25	24	55	80	103	112	106

TABLE III.—*Annual Death-rates to 1,000,000 Living, 1877–97.* (*England.*)

—	Cancer.			Phthisis.		
	Persons.	Males.	Females.	Persons.	Males.	Females.
1877	486	329	636	2079	2176	1987
1878	501	342	653	2111	2211	2017
1879	500	336	656	2021	2140	1908
1880	511	352	661	1869	1939	1804
1881	520	354	668	1825	1920	1735
1882	534	366	693	1850	1947	1758
1883	549	384	705	1880	1967	1797
1884	563	408	710	1827	1927	1733
1885	572	416	719	1770	1875	1670
1886	590	431	741	1739	1874	1612
1887	615	464	758	1615	1728	1508
1888	621	459	773	1568	1717	1428
1889	656	500	803	1573	1719	1435
1890	676	512	830	1682	1868	1506
1891	692	518	855	1599	1781	1429
1892	690	528	843	1468	1626	1322
1893	711	550	863	1468	1639	1307
1894	713	555	861	1385	1562	1217
1895	755	586	914	1398	1564	1243
1896	764	618	901	1307	1485	1139
1897	787	636	929	1341	1532	1162

[1] Supplement to the Forty-eighth Annual Report of the Registrar General for England.

certain periods of years together with the distribution of deaths according to their age-periods. Table III. shows the actual death-rate for cancer in every year since 1877 compared with the corresponding rate for phthisis. The general result of these tables shows a perfectly steady increase with scarcely a break in the mortality ascribed to cancer. They also show that the rate of increase has been more rapid in males than in females, so that the rates for the two classes tend to approximate. The rate of increase is also more rapid at the advanced periods of life than it is in middle age. The total increase in the death-rate since 1851–60 is 86 per cent. for all ages and over 100 per cent. for ages above 55 years. It is instructive to compare these figures with the statistics for Scotland and for Ireland.

In Scotland the increase in the registered mortality from cancer has been as steady as in England and the death-rates of each sex do not differ much from the English rates, being in some years practically identical. The rate has increased from 404 in 1861–65 to 540 in 1881–85, and in 1897 it was 770. The mortality from cancer in the eight large towns of Scotland is higher than that in the country generally, especially in the "insular rural districts"—that is in the islands, where the mortality from cancer is very low. It is noticeable that the death-rate for males does not increase so much faster than that for females as it does in England. In some years—e.g., 1883–86—there was no increase in the male death-rate, the whole increase being due to an advance in the female death-rate from 640 to 740 (see Table IV.).

TABLE IV.—*Annual Death-rates to 1,000,000 Living, 1883–97. (Scotland.)*

	Cancer.			Phthisis.		
	Persons.	Males.	Females.	Persons.	Males.	Females.
1883	540	430	640	2220	2120	2320
1884	550	430	670	2070	1980	2160
1885	560	420	690	2050	1950	2150
1886	590	430	740	2040	1970	2100
1887	600	460	730	1880	1830	1920
1888	610	470	750	1760	1690	1840
1889	670	520	810	1800	1790	1810
1890	610	470	740	1930	1910	1950
1891	680	520	820	1840	1820	1870
1892	670	530	810	1680	1710	1660
1893	690	550	830	1700	1670	1740
1894	720	520	900	1740	1720	1750
1895	730	560	880	1860	1930	1810
1896	730	590	840	1660	1650	1670
1897	770	580	940	1720	1740	1700

In Ireland the mortality from cancer generally has been for many years lower than in England or Scotland, but I do not dwell upon this difference since in comparing the statistics of different countries it is necessary to take into account the special conditions, including the number of persons living at different ages, which may differ greatly in the respective populations. This question I leave on one side as not a part of my subject. The death-rate from cancer in Ireland has, however, increased regularly since 1881—from 370 in 1881–82 to 530 in 1896 and 580 in 1897. A noticeable feature is the great age of the population generally and hence the prevalence of cancer at the higher ages. A few deaths from cancer are annually recorded even in persons aged over 95 years. The Irish statistics also contain valuable tables showing the part of the body affected by cancer to which I shall refer later. In all European countries there has been an increase in the recorded mortality from cancer. For instance, in Norway it increased from 320 in 1877 to 600 in 1887, and in Prussia there was a similar advance from 310 in 1881 to 380 in 1887. In America the returns for New York show an increase from 400 in 1875 to 530 in 1885 (Roger Williams). To take an instance from the Australian colonies we find that in New Zealand there has been a steady increase in cancer mortality since 1881, and it is remarkable that the death-rate for males is very nearly equal to that for females and in one year, 1886, the former slightly exceeded the latter. But it is not my purpose to enter upon the cancer statistics of foreign countries. I mention these facts merely by way of illustration.

We now return to the question whether the increase indicated by statistics is a real one. There is a general impression that deaths from cancer are much more carefully registered now than they were formerly, and many deaths used to be set down to old age or general decay which now would be registered as due to cancer. This view has been stated more than once by the Registrar-General and there can be no doubt that a certain proportion of the registered increase is due to this cause, as was explained by Dr. W. Ogle in the reports of the Registrar-General for 1882 and 1883. In a later report for 1889 reference is made to the supposed fallacy, but the following statement occurs: "It seems scarcely possible to maintain the optimistic view that the whole apparent increase can be thus explained and it must be admitted as at any rate highly probable that a real increase is taking place in the frequency of this malignant affection." It seems *a priori* improbable that the diagnostic skill and general education of the medical profession or greater accuracy in registration have improved so much even in the last ten years as to account for the very large increase in the registered mortality from cancer. Something is no doubt due to the great pains taken in the Registrar-General's office to ensure the accuracy of medical certificates by making special inquiries about vague or ambiguous certificates of death. By such inquiries a certain number of deaths attributed to other causes such as "tumours" have been rightly ascribed to cancer, but the estimated increase due to this cause is a small part of the recorded increase. Dr. Tatham in his last report states that of the deaths classed under the heading "cancer" in the years 1891–97, 2·6 per cent. are the result of this system. Furthermore, the fact that in England the increase of cancer is greater in the male than in the female sex is thought to bear out this conclusion. In the words of Dr. Ogle's report for 1883: "The cancerous affections of males are in a much larger proportion internal and inaccessible than in females and consequently are more difficult of recognition, so that any improvement in diagnosis would add more to the male than to the female figures." But we have seen that this hardly applies to Scotland. The only other detailed argument against the reality of the registered increase of cancer is that of Messrs. King and Newsholme in the Proceedings of the Royal Society in 1893.[1] Besides the argument already put forward by Dr. Ogle they add the following: "The apparent increase in cancer among persons assured in the Scottish Widows Fund Life Assurance who would be presumably well-to-do prosperous persons is not so great as among the general population." They also quote certain statistics on the deaths from cancer in the city of Frankfort-on-the-Main. These arguments, put forward by so eminent a statistician as my friend Dr. Newsholme, require careful attention. The argument from the returns from the life assurance office does not seem to be of much value in consequence of the small number of persons concerned, but if it proves anything it would only show that cancer has increased more rapidly among the lower classes than among the upper classes. I do not see why this conclusion should not be accepted without impugning the accuracy of registration, especially as there are other grounds which make this inference probable. The only really important argument is that affecting the question of accessible or inaccessible cancer raised by Dr. William Ogle. Taking the statistics of Frankfort for 30 years, Dr. Newsholme has separated those kinds of cancer which are regarded as accessible or easy of diagnosis from the inaccessible. To the first group he refers only cancer of the tongue, of the breast, of the uterus, and of the vagina, and from these data he calculates separately the results for the two sexes. Now it is plain that only one of these kinds—namely, cancer of the tongue—applies to the male sex. I find from his tables that in 30 years there occurred in Frankfort 26 cases of cancer of the tongue, of which six were in women, leaving only 20 for the men. In another part of the tables the number is given as 31. On the basis of these 20 or 30 cases Dr. Newsholme has calculated a death-rate per 1,000,000 for periods of years. But these numbers—whether there were 20 or 30 deaths in 30 years—seem a very inadequate basis for calculation and I cannot but think that it would have been better to omit the statistics thus arrived at for the male sex. With regard to females the conclusion is that the mortality from cancer of the breast and uterine organs did not increase, or

[1] Vol. liv., p. 209.

at least not much, in Frankfort during 30 years. This may be a sound conclusion as regards that particular city (of which the population was from 50,000 to 90,000 during the period referred to), but before accepting this conclusion as a general law one must inquire whether similar results are arrived at in larger populations, and especially consider the cancer of so-called "accessible" parts, where the supposed improvement in diagnosis does not apply, or very slightly. It is difficult to find statistics which give the part of the body affected by cancer. The reports of the Registrar-General for England do not generally deal with this subject, but in the report for 1889 Dr. Ogle published a table showing these facts for a certain selected number of deaths from cancer recorded in the reports for 1868 and 1888 respectively.[3] The figures arrived at cannot be regarded as absolutely accurate in consequence of the vagueness of the statements contained in the certificates of death on which they are founded, but the general results are very striking. A general increase in the annual death-rate from cancer of all important parts was noted, but by far the largest increase occurred in cancer of the digestive organs. In 20 years the death-rate of cancer of these organs collectively had increased by 74 per cent. for males and by 98 per cent. for females. Cancer of the tongue increased more particularly by 67 per cent. in males. Cancer of the generative organs in women, on the other hand, increased by 15 per cent. only—namely, 9 per cent. for the breast and 19 per cent. for the uterine organs. The general death-rate from cancer increased in these 20 years from 404 to 610, or 50 per cent. These numbers are not practically comparable with those given above, but they show at least that the increase in cancer of the digestive organs was above the average increase and that for the generative organs below it.

The Registrar-General for Ireland has since 1887 given tables showing the part of the body affected in fatal cases of cancer. A short abstract is given in Table V. In

TABLE V.—*Deaths and Annual Death-rates in Averages for Periods of Years 1887–97.* (*Ireland.*)

—	Cancer.		Cancer of the breast.		Cancer of the tongue.
	Deaths.	Death-rate per 1,000,000	Deaths.	Death-rate.	Deaths.
1877-91 (average)	2102	442	245	51	49
1892-96 (average)	2322	504	268	58	62
1897	2635	579	298	65	70
Increase per cent.	+ 25	+ 31	+ 21·6	+ 27	+ 40

explanation of this table I may point out that the population of Ireland is not increasing but is somewhat diminishing, though the decline is now nearly arrested. Hence the population might almost be taken as constant and the actual numbers of deaths are as significant as death-rates. For cancer generally we see that in 10 years the increase in the annual number of deaths has been 25 per cent. and the rise of the death-rate 31 per cent. For the breast only the increase in numbers is 22 per cent. and in the death-rate 27 per cent. There has been an increase of 40 per cent. in deaths from cancer of the tongue. The results as to these two organs seem to me to be particularly important because there is little room for error of diagnosis. It is impossible to believe that 10 years ago the medical profession in Ireland was less competent than now to diagnose a fatal case of cancer of the breast or of the tongue. I have also calculated the ratio which the mortality from cancer of different organs bears to the total cancer mortality. I find that the proportion of cancer of the sexual organs remains nearly constant, especially that of cancer of the breast; while the proportion of cancer of the digestive organs has slightly increased and this increase is greater in females than in males.

Further to elucidate the relative frequency of cancer of different parts of the body I have collected the cancer statistics of St. Thomas's Hospital for the past 20 years which give an average of something like 200 cases a year. The general result is that while the *admissions* (not *deaths*) for all kinds of cancer have increased the increase has been greatest in cancer of the digestive organs, and in this group the annual admissions have increased to three or four times the number of 20 years ago, while the cases of cancer of the generative system have about doubled and external cancers have more than doubled in frequency. Cancer of the tongue separately calculated shows a great increase, amounting to 83 per cent. in 20 years. These proportions refer to admissions on the medical and the surgical side taken together. If the statistics of the medical wards were taken alone the disproportion between cancer of the digestive organs and that of the generative organs would be still higher. At one time the medical wards (including one ward for diseases of women) admitted more cases in which the generative organs were affected than in which the digestive organs were affected. Now the number of the cases of the latter class far exceeds that of the former. Since the total admissions to the hospital have very much increased in 20 years I ought to say that this fact has been taken into account. I have to thank my friend Dr. A. E. Russell, the medical registrar at St. Thomas's Hospital, for the help which he has given me in preparing these statistics. Taking the results obtained from these three sources of information—namely, Dr. Ogle's statistics for England, those of the Registrar-General for Ireland, and the admissions to St. Thomas's Hospital—I conclude that not only has there been an increase in the prevalence of cancer generally, but that this increase is especially noticeable in cancer of the digestive organs, and is very striking in the case of cancer of the tongue. The increase in cancer of the tongue as calculated from the three sources mentioned above shows even a rough approximation to equality, the *annual* rate from Dr. Ogle's statistics (before 1888) being 3·35 per cent., that from the Irish statistics of mortality 4 per cent., and that of admissions to St. Thomas's Hospital 4·15 per cent. We therefore estimate as a rough approximation that cancer of the tongue is increasing at the rate of something under 4 per cent. per annum, a very striking fact. This conclusion is confirmed by two other series of facts—namely, (1) the more rapid increase of cancer in the male than in the female sex, at least in England, since the digestive organs are in the male sex the most frequent and important site of cancer; and (2) the fact that the increase of cancer is more marked at the later periods of life than it is in middle life, as may be seen in Table II. For the mortality from cancer of the breast, and less strikingly from cancer of the uterus also, attains its maximum earlier in life—namely at from 45 to 50 years of age, hence the large mortality at later ages must be in a great measure due to cancer of the digestive organs. The increase in the death-rate for successive age-periods is well shown in the valuable table (Table VI.) for which I have to thank Dr. Tatham of the General Register Office. The general conclusions which we may draw from all the facts which I have brought before you are, I think, as follows. 1. Cancer is becoming increasingly frequent as a cause of death. 2. In this increase there is a marked predominance of cancer of the digestive organs. 3. Cancer of the generative organs increases less rapidly, but does not stand still. Since it is natural to the human mind to try to explain everything we cannot but ask whether any explanation of this increase can be given. I will mention the most important solutions which have been proposed of the problem.

1. *Heredity.*—Dr. William Ogle, in his report for 1869, makes the important remark that if cancer be in any way hereditary (a question which he does not undertake to decide) and if, as is known, it does not hinder fertility, there must be in every generation an increasing number of persons possessing this inherited liability to cancer. Hence, he says, "it must follow as a necessary arithmetical consequence that the tendency shall spread wider and wider among the population." Since this explanation can only be adopted if we also accept the theory of heredity in cancer, which I regard as being for the present not actually proved, I will not discuss it further.

2. *Increased longevity.*—It is often thought that the increase of cancer can be explained by the general lengthening of the duration of human life, at least in this country, by which there would be larger numbers of persons living at the ages liable to cancer. But this rests on a misapprehension.

[3] In the Report of the Registrar-General for 1897 Dr. Tatham has introduced a most valuable table showing the description of the disease and the part of the body affected by cancer. But there is nothing in the English reports of previous years to compare with this.

TABLE VI.—*Annual Death-rate from Cancer per 1,000,000 Living at successive Age-Periods. (England.)*

Males.

Year.	All ages.	0-	5-	10-	15-	20-	25-	35-	45-	55-	65-	75 and upwards.
1891	518	29	14	7	39	50	110	376	1158	2706	4465	4835
1892	528	29	18	18	28	39	89	374	1194	2792	4696	4794
1893	550	33	18	14	22	60	98	373	1259	2926	4754	5086
1894	555	32	21	19	30	46	100	373	1265	2884	4853	5394
1895	586	32	19	23	33	50	104	380	1324	3156	5040	5685
Mean	547	31	18	16	30	49	100	375	1241	2895	4764	5164
1896	618	27	23	19	42	48	89	419	1362	3340	5427	5992
Increase per cent.	19·3	—	—	—	—	—	—	11·5	17·6	23·4	21·5	23·9

Females.

1891	855	23	12	6	30	36	183	901	2350	3893	5335	5568
1892	843	28	12	10	19	34	168	880	2249	3844	5382	5709
1893	863	19	14	11	16	40	183	914	2325	3917	5515	5640
1894	861	24	9	20	25	39	182	906	2268	3915	5476	5897
1895	914	29	17	14	25	50	196	969	2345	4268	5630	6469
Mean	868	25	13	12	23	40	182	914	2307	3969	5469	5859
1896	901	32	11	11	30	42	175	933	2508	4187	5686	6539
Increase per cent.	5·4	—	—	—	—	—	—	3·5	—	7·6	6·6	17·7

TABLE VII.—*Annual Death-rates in Groups of Years to 1,000,000 Living, 1858–96. (England.)*

Diseases.	1858-60.	1861-65.	1866-70.	1871-75.	1876-80.	1881-85.	1886-90.	1891-95.	1896.	1896.
All causes	22,221	22,582	22,425	21,962	21,791	19,403	18,895	18,738	17,101	—
Zymotics	3,325	3,369	3,054	2,783	2,199	1,832	1,583	1,872	1,796	—
Organs of digestion ...	1,022	1,019	984	986	995	941	941	977	1,007	—
Cancer	335	368	404	446	495	548	632	712	764	M. 618 F. 901
Phthisis	2,565	2,527	2,448	2,218	2,040	1,830	1,635	1,464	1,307	M. 1485 F. 1139
Deaths from cancer to 100 from phthisis ...	13	14·5	16·6	20	24·3	30	38·7	48·7	58·4	M. 42 F. 79

Note.—It is noteworthy that the death-rate from diseases of organs of digestion, other than cancer, has not increased.

Before the census of 1891 it was generally expected that the result would be to show a larger proportion of old persons in the population, but the result of that census was to show that the proportion of persons above the age of 45 years had not at all increased in comparison with the former censuses of 1871 and 1861. On the contrary, the proportion at certain ages above 45 had even diminished. This explanation, then, has no validity.

3. *The decline of tubercle.*—It will be seen from Tables III. and VII. that concurrently with the increase of cancer there has been in England a remarkable decline in the death-rate from phthisis. This is less true of other tuberculous diseases, but I do not take them into account since they affect chiefly early periods of life and not those in which cancer is specially prevalent. It is therefore often said that cancer carries off the lives which have been spared by the diminishing mortality from phthisis and I was formerly disposed to accept this explanation.[4] It is, however, to be observed that in England the reduction of the death-rate from phthisis is far more marked in the female sex than in the male sex, whereas the increase of cancer, as we know, exhibits a converse relation. Still, if the English statistics were the only ones existing this explanation might be very plausible. But when we turn to the results for Scotland and to those for Ireland we find that it does not apply. In Scotland, for instance, the increase in cancer has been accompanied by a much slighter diminution in the mortality from phthisis than has been observed in England (see Table IV.). In the eight principal towns of Scotland the reduction in the death-rate from phthisis between 1887 and 1897 has been only from about 21 to about 20 in 10,000, while the general death-rate from phthisis is far higher than in England. In Ireland the Registrar-General especially points out that there has been of late years virtually no reduction at all in the mortality from phthisis. Since, then, this explanation cannot apply to Scotland or to Ireland, it is very doubtful whether it has any importance as applied to England. I should like, however, to draw attention to the extraordinary alteration in the ratio of the death-rates from cancer and from phthisis for the female sex in England. In 1877 the death-rate for females from cancer was 636 per 1,000,000, that from phthisis 1987, the former being less than one-third of the latter. In 1897 the cancer death-rate was 929, that from phthisis 1162, a ratio of four to five. That is, cancer now causes in English women four-fifths of the mortality caused by phthisis, a result which must appear surprising to those who have not looked into the statistics.

4. *Decline in zymotic diseases.*—During the whole period marked by an increase in cancer mortality there has been a very great decline in the mortality from zymotic or infective diseases and, since these diseases are especially fatal in early life, it is naturally considered that this decline allows more people to survive to the ages at which they become liable to cancer. Considering, however, what was said before about the proportional number of old persons in the population one cannot but doubt whether this explanation is even plausible. I have given in Table VII. the annual death-rates in groups of years from zymotic diseases and phthisis compared with cancer.

5. *Prosperity.*—It is often said, and has been particularly urged by Mr. Roger Williams, that cancer is a disease to

[4] See a paper in the Proceedings of the Life Assurance Medical Officers Association, Session 1896-97. London, 1898.

which well-nourished and prosperous populations are especially liable. Probably there is some truth in this and with regard to the lower classes in this country there can be no doubt that their general prosperity and average nutrition have greatly improved during the period under consideration. In 1849 the average number of paupers in England was 62 per 1000. In 1896 it was only 23·4 per 1000. This contrast indicates an enormous improvement in the general well-being of society, especially of the poorer classes. These classes have, indeed, of late years in their food and general nutrition closely approximated to the level of the so-called better classes in the last generation. In particular their consumption of animal food, especially fresh meat, has very largely increased. Now it is the poorer classes that by their numbers make national statistics. Possibly the consumption of meat may be, as Mr. Williams suggests, an important factor. But we must remember that cancer is said to be very prevalent in such countries as India where the population is chiefly vegetarian. I think, therefore, that the question of the influence of diet on the production of cancer is hardly yet ripe for solution. We must not, however, forget the special incidence of cancer of late years on the digestive organs, and of all speculations respecting the predisposing causes of cancer this seems to me the most plausible. In regard to cancer of the tongue, the increased prevalence of smoking must not be forgotten.

6. *Alcoholism.*—Some would be inclined to set down the prevalence of cancer in certain classes, and especially its tendency to attack the digestive organs, to excessive, or at all events to a large, consumption of alcoholic drinks. There is no doubt that the average consumption of alcohol in this country has very greatly increased. Moreover, by the Registrar-General's report for 1896 we learn that the mortality directly referred to intemperance in that year was considerably above the mean rates in previous years, and we know that deaths indirectly due to alcoholic excess are much more numerous than those directly caused by it. It may, moreover, be the case that free indulgence, even stopping short of actual intemperance, in drink, with abundance of highly nourishing food, tends to produce cancer of the digestive organs. The question of occupation is also important here (see Table VIII.). Looking at the tables

*TABLE VIII.—*Cancer Deaths in Males. Highest and Lowest Mortality for Certain Occupations, showing the Comparative Figure to 1000 Deaths from all causes. (England.)*

Above the average (47 per mil.). Occupations.	Comparative Figure.	Below the average (47 per mil.). Occupations.	Comparative Figure.
Chimney-sweeps	156	Medical profession	43
Copper-miners	86	Miners—all classes	37
Brewers	70	Farmers	36
Innkeepers (London)	70	Agricultural labourers ...	36
Inn servants	67	Gardeners	36
Commercial travellers ...	63	Coal-miners	36
Plasterers	62	Clergymen	35
Barristers and solicitors ...	60	Potters	35
Merchant seamen	60	Grocers	34
Innkeepers (industrial districts)	58	Mosiery-makers	30
		Lace-makers	28
Millsellers	58	Lead-workers	27
General labourers (London)	58	Coal-miners (S. Wales) ...	26
Butchers	57	Paper makers	22
Occupied males (London)	59	All occupied males	44
Occupied males (industrial districts)	48	All occupied males (agricultural districts	40

* In this table the mortality of all males from 25 to 65 years of age from all causes is taken as a standard = 1000. Out of this number the deaths from cancer in *all males* amount to 47. The above table gives the comparative numbers for males in different occupations, these numbers having only a *relative*, not an absolute, value. (Supplement to Fifty-fifth Annual Report of the Registrar-General in England, Part 2, p. clx.)

showing the relative liability of different professions to death from cancer given in the Registrar-General's report on the census of 1891 I find that, putting aside two small and special classes—viz., chimney-sweeps and copper-miners—the highest mortality from cancer is found in the occupations of brewers, innkeepers (especially in London), inn servants, and commercial travellers. In all these occupations there is no doubt special temptation to indulgence in alcoholic drinks. I also observe that farmers, agricultural labourers, and all workers generally in agricultural districts have a lower rate than the average, and very much lower than labourers and industrial workers generally in London. This is important, because it is frequently stated that the inhabitants of rural districts suffer more from cancer than do dwellers in towns. Now we know that the proportion of the population living in towns has greatly increased of late years compared with those living in the country, therefore it is possible that town life itself is one factor attending the increased prevalence of cancer. But I must say, in conclusion, that the impression made upon my mind is that no explanation yet given accounts for the increase in the prevalence of, and mortality from, cancer; the cause of this change, if it has any special cause, has yet to be ascertained. But of the fact that the mortality from cancer has increased and is increasing I maintain there cannot be the smallest doubt, even if we allow that a certain proportion, but a proportion steadily diminishing, to the recorded increase has been due to improvements in medical diagnosis and registration.

Postscript.—Since this lecture was delivered the annual report of the Registrar-General for England for 1897 has appeared and the statistics given show that the increase of cancer is fully maintained, the death-rate being the highest on record. Dr. Tatham in his introductory remarks does not accept the view that the increase of cancer is only apparent, though he thinks that a certain portion of the recorded increase in the years 1851-60 and 1871-80 was due to improvements in medical diagnosis. But he remarks, as regards the future, that there are evidently limits to any possible effects of such improvement.

EPILEPSY OF CARDIO-VASCULAR ORIGIN.

BY R. LLEWELYN JONES, M.B. LOND., M.R.C.S. ENG., L.R.C.P. LOND.,
ASSISTANT MEDICAL OFFICER, DURHAM COUNTY ASYLUM;
AND
T. ALDOUS CLINCH, M.D. EDIN.,
PATHOLOGIST, DURHAM COUNTY ASYLUM.

THE incidence of epileptiform attacks in the course of cardiac and cardio-vascular disease and the discussion of its relationship thereto have for many years past been a vexed question with the physician. As early as 1834 Littre[1] pointed out that disease of the right side of the heart might be followed by cerebral disturbance. Stokes[2] in 1846 reported seven cases showing the frequent coincidence of slow pulse with aortic disease, noting the association with them of small muscular contractions and referring to the cases reported by Adams[3] in which pseudo-epileptic and pseudo-apoplectic attacks occurred. Delasiauve[4] narrates a case of epilepsy with cardiac disease which disappeared under the exhibition of digitalis. Holberton[5] (quoted by Balfour) reports a case of inflammatory compression of the cord after injury when the pulse dropped to 33 and sometimes to 20, 15, and eight per minute. This was followed by syncopal attacks ending in epileptiform seizures, in one of which the patient died. Renaut[6] refers to a case of mitral stenosis with fits stopped by the prone position. (Tebaldi[7] has shown that there is retinal anæmia during epileptic convulsions.) Murchison[8] relates the case of a woman, aged 66 years, who had occasional lapses of a few seconds' duration with complete loss of consciousness. The radial pulse was 26 and the cardiac pulse was 52. The patient was

[1] Article, Cœur, Dictionnaire, 1834.
[2] Dublin Quarterly Journal of Medical Science, 1846, vol. xi.
[3] Dublin Hospital Reports, 1846, vol. iv.
[4] De l'Epilepsie, 1852, p. 372.
[5] Transactions of the Medico-Chirurgical Society, 1841, p. 76.
[6] La Circulation Pulmonaire, &c., Province Med., 1896.
[7] Ueber die Anwendung der Ophthalmie, &c., Rivista Clinica, 1870.
[8] Bradycardia with Epilepsy, Brit. Med. Jour., vol. ii., 1872.

improved by diet, iron, and rest. Pugin Thornton[9] exhibited in the Clinical Society of London a patient suffering from syphilitic laryngitis with a pulse-rate of from 16 to 48 per minute; she suffered from epileptiform attacks and in addition was a prey to visual hallucinations which she afterwards clearly recognised as spectral. The attacks yielded to iodides. The case is remarkable for some fine tracings. Mahomed[10] relates the case of a woman who, after much privation in the siege of Paris, suffered from syncopal attacks and a very slow pulse. Napoleon, it is well ascertained, suffered from an abnormally slow pulse and always felt uncomfortable save in the excitement of battle when it rose to 60. He also suffered from *petit mal*. In 1877 Russell[11] relates and quotes two cases—Holberton's already referred to and Fletcher's with disease of the central nervous system. Russell thought the prominence of cardiac disease indicated that it was the causal factor of slow pulse and quoted diphtheria in his favour, a view quite in harmony with the pathology of that date when the important rôle played by toxins was unknown. In his cases belladonna was of no value. Lépine[12] mentions a case of coughing with subsequent fits, these being of a convulsive nature. Hearder[13] describes a case with necropsy in which epileptic attacks, complicated by syncopal symptoms, occurred in a case of aortic disease. Vascular disease was present in this case. Gunning[14] records a case, aged 52 years, in which the pulse was 22 per minute, with prolonged syncopal attacks. Henry Day[14] reports a case, aged 79 years, in which the pulse was 22, with præcordial uneasiness and tendency to syncope; later convulsive attacks supervened, one of which is described in detail; the pulse suddenly stopped and a violent spasm seemed to radiate from the heart to every part of the body, the eyelids shutting and opening every second; the heart did not beat for 35 seconds, then for 25 seconds. It then beat four times per minute for four minutes when consciousness returned as the pulse went up to 22. Tyson[14] reports a case, aged 74 years, in which bradycardia and epileptiform convulsions alternated with syncopal attacks; hypertrophy of the left ventricle was the only sign of cardiac disease. Knövenagal[15] found epilepsy as a result of myocarditis; recovery ensued. Simon[16] relates a case of slow pulse—30 per minute; the heart was enlarged and dilated; there was an aneurysm of the size of a walnut on the wall of the left ventricle at the junction with the auricle; there were no convulsions. G. Ballet[17] describes a case of Graves's disease with fits with intermittence of the pulse during the fits. Boyce[18] relates a case of a policeman, aged 25 years, who had had syphilis two and a half years previously. The patient first experienced violent pains in the head and fell down in a convulsive fit. There was vomiting. The pulse was 14 per minute; on one occasion 15 seconds elapsed without a beat. The patient sank and died. Frequent convulsions occurred between the first fit and death; there was no *cric* or air hunger. Boyce localised the lesion as being in the cardiac centre, suggesting gumma as the cause. St. George Mivart[19] describes a case in which the pulse-rate was 24, with swoons of epileptic type; albuminuria existed and likewise a cardiac bruit. Fits came on in the stooping positon. Gibbings[20] relates a case of epileptiform attacks with slow pulse which at one time fell to 12. In this case an aura as of hot fluid at the back of the neck heralded the onset of a fit. Necropsy showed freedom from vascular disease, but revealed fluid in the left pleura. Lemoine[21] speaks of a case where the prone position brought on fits due to cerebral congestion. He also shows that hysteria may be a result of cardiac disease. In epileptic attacks the *cric* is not observed and as a rule it is *petit mal* that is seen. The aura of cardiac disease is like a wave of blood passing to the head, is slow and gives more warning than in genuine epilepsy; the tonic stage is very short.

Balfour[22] states that all slow pulses, however originated, may be complicated by pseudo-epileptiform and pseudo-apoplectiform attacks and relates the case of an old lady with a normal heart-rate of 60 but a pulse-rate of 20 with epileptic attacks. Bristowe[23] also reports some cases, one of which showed the association of temporary cerebral congestion with epileptiform fits. The patient, aged 60 years, was very fat and suffered from chronic bronchitis, also from severe prolonged paroxysmal attacks of cough with whooping inspiration much like pertussis, and after lasting from 30 to 60 seconds respiration ceased, the face became livid, and insensibility and convulsions supervened. Another patient, aged 31 years, at one time a soldier, had had syphilis and ague. There was a history of mental excitement, followed by bodily exertion; faintness supervened and next day he had an epileptic fit. These had recurred frequently. On admission the pulse was 26 per minute. The fits always came on after a long interval between the cardiac beats, invariably after five seconds' interval. There was a loud systolic bruit above and to the right of the apex and prolonged thence to the base. The pulse rose to 80 after a week's treatment. The fits had all but disappeared. Another patient was a woman, aged 54 years, a widow, who had so-called rheumatic fever; she suffered from fainting attacks and gradually developed epileptiform convulsions. The pulse-rate then was 30 and it fell to 17. She had fits every half hour. There was no brain, lung, or kidney disease. There was slight œdema of the ankles. She died from increasing frequency of attacks. Another patient was a mill-sawyer, aged 49 years. Fits supervened, were recovered from, and then recurred again 18 months later; there was a bruit at the apex; the kidneys were normal. The pulse at the time of the fits was 22. He recovered from the fits with a *cric*. He had had fits when the pulse rate was at 72, but then it usually stopped before the fit. He died during a seizure. Necropsy revealed the heart hypertrophied on the left side, with little atheroma of the valves and aorta and left coronary. There was œdema of the brain. Wilkinson[24] relates a case, aged 62 years, in which general senile degeneration alternated with suppression of heart beats. In this case the patient had failure of memory and attacks of loss of consciousness, only occurring on exertion, of five minutes' duration, vertiginous in nature. Loss of consciousness was complete. There were no spasms. The attacks diminished in frequency under perchloride of iron and liquor strychniæ.

Mahnert[25] on heart epilepsy gives a long *résumé* of literature, pointing out that the condition assumes two forms—one in youth and one in old age—in the one with valvular disease and in the other with arterio-sclerosis. He draws attention to the relationship of chorea and epilepsy, considering cerebral anæmia as a cause of both. He reports three cases—one of alcoholic bradycardia, one of syphilitic arterio-sclerosis, and one with gouty arterio-sclerosis. The last patient was giddy at 50 years of age and epileptic at 60 years of ago. He yielded slightly to treatment. The senile arterio-sclerotic form can be separated from other forms of heart epilepsy by constancy of pulse-slowing. The attacks may be caused by an anæmic condition of the brain or due to degeneration secondary to anæmia—i.e., prehæmorrhagic softening—which may cause epilepsy or apoplexy. There is no need for disease of cerebral vessels. The patients are generally males and the fits are nocturnal. Treatment consists in strengthening the heart. Caffeine hydrobromate is especially indicated. Petrucci[26] reports the case of a man, aged 52 years, whose pulse was 14, with vertiginous attacks; the maximum pulse was 24. The necropsy showed extensive atheroma of vessels and foci of chronic myocarditis. Smith[27] alludes to epilepsy of cardiac origin and states that in these cases the heart is dilated and the pulse is rapid. C. D. Murray[28] relates the case of a seaman, aged 21 years, who used alcohol and tobacco freely. He complained of præcordial pain and giddiness, dyspnœa,

[9] Clinical Society, Brit. Med. Jour., vol. i., 1875, p. 323.
[10] Ibid.
[11] Unusual Slowness of Pulse, Medical Times and Gazette, 1877, p. 58.
[12] Revue de Médecine, Paris, 1877.
[13] Brit. Med. Jour., vol. i., 1878, p. 821.
[14] Gunning, Day, Tyson: Brit. Med. Jour., vol. i., 1880, p. 821.
[15] Epileptiforme Anfalle in Acuten Gelenks Rheumatismus, Berliner Klinische Wochenschrift, 1880, No. 27.
[16] Case of Slow Pulse, Brit. Med. Jour., vol. ii., 1881.
[17] Revue de Médecine, Paris, 1883.
[18] Epileptic Convulsions, Brit. Med. Jour., 1884.
[19] THE LANCET, Jan. 3rd, 1885, p. 10.
[20] Case of Remarkably Slow Pulse with Epileptiform Seizures, THE LANCET, Feb. 14th, 1885, p. 288.
[21] De l'Epilepsie d'Origine Cardisque et de son Traitement, Revue de Médecine, 1889, vii., p. 5, 365.
[22] Diseases of the Heart and Aorta.
[23] The Influence of Extreme Slowness of Pulse in the Causation of Epileptiform Convulsions, THE LANCET, Sept. 22nd, 1894, p. 671. See also Transactions of the Medical Society, vol. xvii.
[24] Senile Bradycardia, Brit. Med. Jour., vol. ii., 1895, p. 1107.
[25] Herz Epilepsie: Wiener Medicinische Wochenschrift, 1897, Band xlvii., pp. 1521, 1566, 1610.
[26] Gazetta degli Ospedali, Sept. 16th, 1898.
[27] Münchener Medicinische Wochenschrift, Oct. 25th, 1898.
[28] Bradycardia in a Young Man, THE LANCET, Jan. 28th, 1899, p. 229.

and convulsions. He was gradually growing worse. Cardiac dulness increased to the left. There was a rough systolic bruit heard all over; also diastolic. The points of interest are: (1) the age; (2) the healthy valves; (3) hypertrophy of the heart with fatty degeneration; and (4) failure of drugs—atropine, strychnine, and nitro-glycerine.

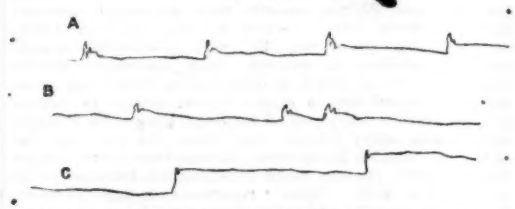
Allbutt[29] considers that vertigo, syncope, and epileptiform attacks with a slow pulse are grave symptoms and are suggestive, if not conclusive, indications of cardiac degeneration. Bradycardia may depend on irritation of the vagus only, the heart being sound, and in these cases arhythmia will be present. Morison[30] considers that the neural cause of retardation in bradycardia may be extra- or intracardial in orgin. He quotes Dehio, who says that extra-cardial bradycardia could be accelerated by the administration of atropine. The latter constitutes the graver danger to life. He suggests that the disorder is in the spinal visceral innervation of the heart. G. W. Balfour[31] considers that these hearts are always dilated and never much hypertrophied, but injury to the spinal accessory is absolutely necessary in all these cases of slow pulse. Fractures of cervical vertebræ may cause injury to this nerve and thus cause slowing of the pulse. Broadbent[32] says that the fits are usually slight, the pulse is slow, and the heart is fatty. After apoplectiform attacks patients are usually feebler in mind and body. Dana[33] makes no reference to cardiac disease as a cause of epilepsy, though he states that idiopathic epilepsy may commence at 60 years of age. Gowers's[34] view of the relations of cardiac syncope and epilepsy is so pertinent to this matter that we quote it at length: "Besides these [other forms] patients sometimes suffer from sudden brief symptoms bearing more or less resemblance to some element of the minor epileptic attack, such as sudden, transient, causeless vertigo or recurring causeless faints. Many of these cases are probably on the border-line of epilepsy into which some of them would pass unless relieved. There is indeed some reason to think that cardiac faints, often occurring, may establish in the brain a tendency to pass into a state of similar functional abeyance, essentially *petit mal*." The following case has recently come under our attention and appears to be of sufficient interest to merit being recorded.

The patient, a man, aged 60 years, was admitted to the Durham County Asylum in June, 1888. The cause of his insanity was stated to be intemperance, but it is more than probable, in the light of his after history and symptoms, that syphilis also played a part. His symptoms were those of simple mild mania with slight exaltation and delusions which amounted to his believing that he was one of the Trinity and that he would never die. This type of insanity is not infrequently seen where syphilis has been the cause. Three years afterwards he developed swelling of the right testicle which lasted about six months and finally broke down and discharged some greenish pus; it was believed at the time to be of a gummatous nature. Seven years after admission he was said to have mitral regurgitation. With regard to his present illness, on Feb. 1st, 1898, the patient was taken ill suddenly during dinner with a syncopal seizure. When first seen he was seated on a chair, breathing laboriously, with a pulse-rate of 40. His face was cyanosed. After the administration of whisky and a mixture containing ammoniacum and ether he was removed to the sick room. At 8 P.M. his temperature was 102·6°F. and his pulse was variable—11, 20, and 26 per minute. A series of epileptiform convulsions now supervened. It was noted that the time of onset of the fits was signalled by a more than usually long interval between the pulse-beats. On one occasion fifteen seconds elapsed without a beat. During that minute there were but eight beats (by auscultation). During the fit the expression was one of mental anguish the eyes protruding and the pupils dilated and anxious. The face was flushed darkly on the malar eminences. Respiration was noisy, slow, laboured, hissing rather than stertorous, subsequently to a fit; the pulse-rate rapidly increased to between 50 and 60 per minute. The fits varied much in intensity and extent—sometimes only slight unilateral facial twitching, at others the left arm and face, sometimes right-sided, and occasionally general.

[29] System of Medicine: Article, Bradycardia, vol. v., pp. 834 and 837.
[30] The Morisonian Lectures: Edinburgh Medical Journal, February, 1899, p. 166; also THE LANCET, vol. i., 1899.
[31] Loc. cit.
[32] Heart Disease: London, 1897, p. 288.
[33] Nervous Diseases: New York, 1898.
[34] Nervous Diseases: London, 1893, p. 751.

The patient was a tall, spare man. His facial expression was dull and vacant. Mentally he suffered from chronic mania with advanced dementia. Enlarged venules were present on the face. The temporal arteries were tortuous and very visible. The pupils were contracted. There was no iridoplegia. With regard to the chest, it was enlarged antero-posteriorly; the cartilages were rigid; there was no apex beat visible. Pulsation was plainly visible in the intercostal arteries near the sternum. On palpation the apex beat was a quarter of an inch external to the nipple line; feeble chest movements were very limited. On percussion there was diminished resonance over the manubrium continued for half an inch into the first three intercostal spaces and merging into cardiac dulness. Cardiac dulness extended a quarter of an inch to the right of the sternum and a quarter of an inch external to the left nipple line. The lungs were hyper-resonant in front; the right lung had deficient diminished resonance from the apex to the base. The breath sounds were harsh, with occasional medium-sized râles on inspiration. On auscultation there was a loud, ringing, occasionally harsh presystolic bruit; the second aortic sound was sharp. The pulse was slow—a large collapsing pulse with very low tension. The arteries were excessively tortuous and atheromatous. (Fig. 1, A, B, C.) Calcareous

FIG. 1.

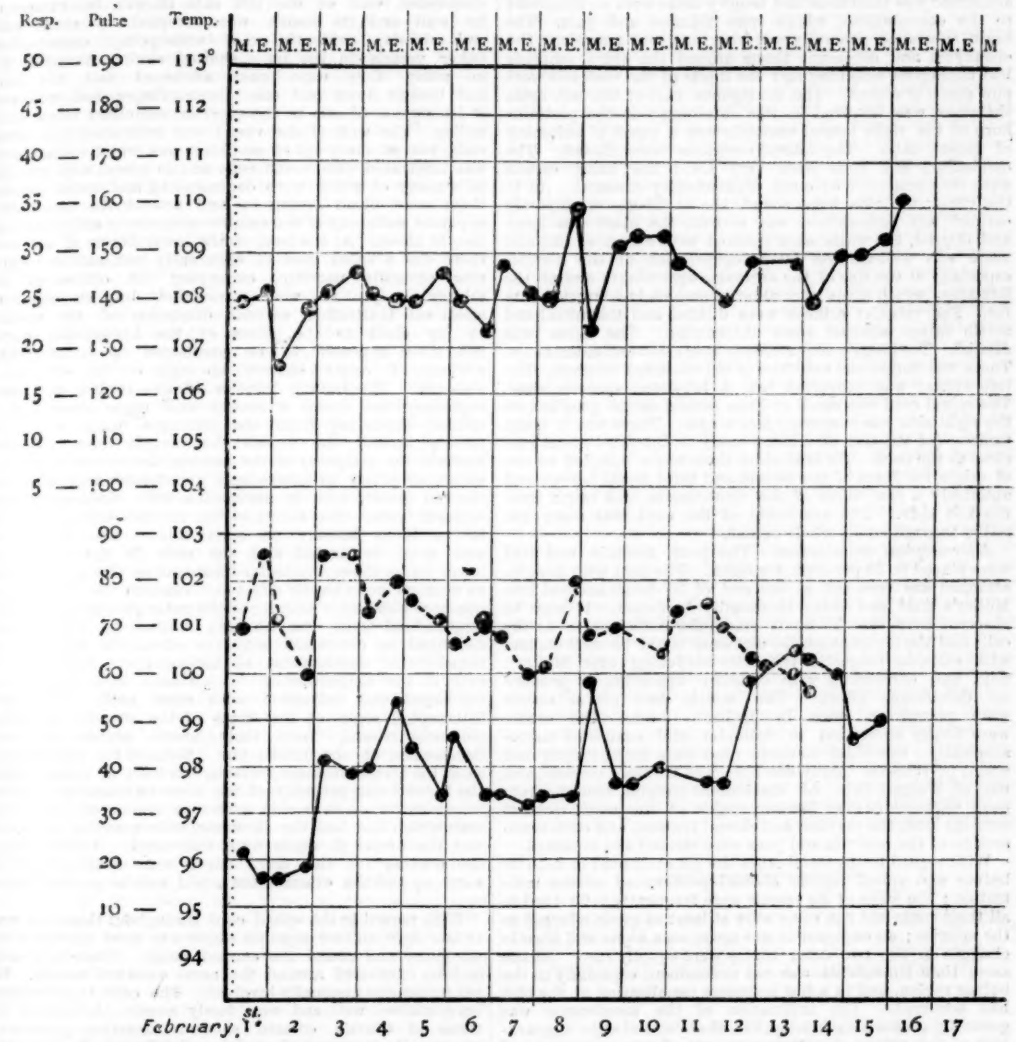


A, 40 pulsations per minute. B, 30 pulsations per minute. C, 25 pulsations per minute.

plates were easily detected in the arterial coats. With regard to the nervous system there were no paresis and no iridoplegia. The reflexes were deep. The left knee-jerk was present. There was left ankle clonus, also Achilles tap. The right knee-jerk was absent. There was slight right ankle-clonus and Achilles tap. Biceps and triceps reflexes were present. The sensory system was not examined. The plantar and cremasteric reflexes were exaggerated. From Feb. 4th to the 10th no fit occurred; the congestion of the right pulmonary base grew more marked. His pulse was very variable, ranging from 21 to 58. (Fig. 2) There was involuntary micturition on one occasion. On the 10th there was marked twitching of the hands followed by general convulsions. The arm reflexes on the right side were absent; also the knee-jerks. Ankle clonus was present. On the 12th subsultus tendinum was well marked. There was incontinence of urine. The tongue was dry and brown. The pulse was irregular and breathing was stertorous. The right lung was more engorged. On the 14th the patient's weakness was rapidly increasing. Dyspnœa was marked. Right ptosis and contraction of the right occipito-frontalis were present. There were conjugate deviation of the head and eyes to the right and some jerking of the sterno-mastoid. There was apparent laryngo-pharyngeal paralysis. Respiration was noisy. The pulse was 60. There was free sweating on the face which was alternately flushing and paling. On the 15th the right naso-labial fold was less strongly marked than the left. The respiration was 40 and the pulse was 72 and thready. Dyspnœa was very urgent. Breathing was mainly diaphragmatic. The heart sounds were indistinguishable. The corneæ were glazed; the pupils were equal. The patient was evidently sinking and he died at 3.30 P.M.

The following are the salient points of the case: cardio-vascular degeneration, slow pulse, convulsions, lost knee-jerk, cervico-facial paresis, and spasticity of the limbs. The occurrence during the course of the disease of this galaxy of nervous symptoms afforded proof of the existence of intracranial organic mischief and so lends support to the view expressed by Balfour and Morison of the central origin of bradycardia. We contend that the bradycardia is as much a symptom of disease of the inhibitory cardiac tracts as the ptosis is of some affection of the oculo-motor tracts. The following signs seem to merit some effort at interpretation—i.e., right ptosis, right facial paresis, the associated

FIG. 2.



The uppermost line is the respiratory rate. The broken line is the temperature chart. The lowest line is the pulse rate.
NOTE.—The pulse rate is lower than the temperature, though in a normal chart it is higher.

movement of the head and eyes to the right, loss of the right knee-jerk, and spasticity of the extremities. In considering these signs we are struck by the following features: (1) the widespread and multiple character of the lesions; and (2) their limitation to one side. No single lesion could explain such protean phenomena and the difficulty is enhanced by the fact that they can be explained by lesions in more than one position; for instance, the conjugate deviation of the head and the eyes to the right might be due to a focus of irritation in the cortex, the corona radiata, the basal ganglia, and bulb. The other signs are likewise open to more than one interpretation and it seems therefore preferable to defer their discussion to the results of the necropsy. With reference to the *causa causans* the multiplicity of the lesions points to their syphilitic origin. Balfour's dictum that bradycardia, however produced, may be followed by epileptiform or apoplectiform seizures seems worthy of all acceptation. The course of the malady shows the following gradations: slow pulse with no apparent symptom, succeeded by vertigo, swoons, pseudo-epileptic and pseudo-apoplectic seizures, the latter often followed by evidences of mental and physical degeneration. Huchard, in addition, has noticed slight insomnia, præcordial anxiety, going on to angina, and pallor of the face and body. Accepting cerebral anæmia as the *fons et origo mali*, the variety of the symptoms seems not difficult of interpretation. The prolonged anæmia must inevitably bring about progressive malnutrition and consequent degeneration, so that we pass from the region of functional disability into that of organic inability. According to Morison the immediate cause of bradycardia is neural and may take origin anywhere between the cortical areas and the cardiac nerve-endings. Of psychic conditions, hysteria, melancholia, and mania are the only ones with which we are acquainted; other causes may be organic, toxic, or reflex. Inasmuch as any condition of slow pulse may, theoretically speaking, be followed by cerebral disturbance we will now focus our attention more particularly on those factors which most usually give rise to cerebral disturbance. These are organic disease, affecting the medulla, cervical spinal cord, spinal accessory, vagus, and intracardiac ganglia, and finally myopathic—i.e., degeneracy of the myocardium dependent on coronary arterio-sclerosis.

Necropsy.—With regard to the head, the skull-cap was congested and thinned and the dura mater was considerably

adherent to it. Pacchionian bodies were well marked. The arachnoidal veins were moderately distended. The pia-arachnoid was thickened and tough; there were no adhesions to the convolutions, which were thinned and pale. The brain substance generally was very soft and anæmic. The ependyma and subjacent tissue around the third ventricle had undergone softening and the limits of the ventricle were now much obscured. The contiguous part of the left optic thalamus was involved in this softening; in the posterior horn of the right lateral ventricle was a patch of softening of recent date. The lateral ventricles were dilated. The cerebellum and pons were very soft; the basal vessels were very small but were not pronouncedly diseased. As to the chest, the ribs were sound, the cartilages were partly ossified, the pericardium was normal, the heart was large and dilated, the walls were covered with excess of fat, and there was well-marked fatty degeneration of the muscle, especially at the tips of the auricular appendages and at the left apex, which areas were almost completely converted into fat. The valvular orifices were dilated and the mitral and aortic valves showed some thickening. The aorta was dilated. The lungs were extremely congested and œdematous. There was undoubted evidence of old scattered tubercle. The left kidney was converted into a lobulated caseous mass. The spinal cord was small and the second sacral ganglion on the right side was converted into a cyst. There was a small tumour (of the size of a hemp seed) on the third sacral root close to the cord. On both sides there was a mingled centre of origin for fibres of the second and third sacral nerves and anteriorly a few fibres of the right nerves took origin from the left side. The arachnoid of the cord was somewhat milky throughout its whole extent.

Microscopical examination.—The pons, medulla, and cord were placed in 10 per cent. formalin. The cord with ganglia attached was removed at the end of 24 hours and put into Müller's fluid and there thoroughly hardened. It may be observed here that 24 hours was quite sufficient to fix the cells and the chromatophilic elements could be well stained with suitable reagents, the after-hardening with Müller's fluid and embedding with celloidin appearing to produce no deleterious effect. The sciatic and crural nerves were placed at once in Müller's fluid. The whole were finally embedded in celloidin and examined microscopically; the chief methods used were hæmatoxylin and eosin, polychrome methylene blue, Van Gieson's method, and that of Weigert-Pal. All the lumbar ganglia, sections from each segment of the lumbar region of the cord, isolated sections from the cervical and dorsal regions, and each tenth section of the medulla and pons were stained and mounted.

With regard to the membranes the pia arachnoid in both its bulbar and spinal regions showed pronounced cellular infiltration; the walls of its vessels were frequently infiltrated in all their coats and the veins were at least as much affected as the arteries; an endovasitis was never seen alone and fibrotic changes in the two outer tunics were equally rare. At the same time thrombosis was not uncommon, especially in the bulbar region, and in a few instances canalisation of the clot had occurred. The infiltration of the membranes was generally greatest anteriorly, but there was always aggravation at the points of entrance or exit of nerve roots to and from the myelon and wherever the membranes were liable to be folded together, as at the entrance of the middle cerebellar peduncle into that organ.

As to the bulb, at the level of the point of the calamus scriptorii we found that beneath the membranes was a thick network of neuroglia and in this were embedded enormous numbers of amyloid bodies a few of which were also to be found in the pia mater. This neuroglial thickening did not correspond exactly with the pial thickening as it was most marked posteriorly. Beneath this layer were the external arcuate fibres which appeared to be tolerably free from degeneration but beneath them the amyloid bodies again became very numerous. The cells of the upper part of the eleventh or lower part of the tenth nucleus were much diseased; they had lost both their processes and their chromatophile elements, they contained vacuoles and were shrunken. The cells of the tenth nucleus showed a dispersion of the chromatophile elements to the periphery of the cell and sometimes a complete loss of the same together with dislocation of the nuclei. The cells of the twelfth were generally normal, but, in common with all the cell groups of the bulb, individual cells were found to be diseased. The ependyma of the fourth ventricle was granular and frequently the ependymal cells infiltrated into the subjacent tissue. About this level (the lower part of the fourth ventricle) the sub-ependymal vein on the left side showed infiltration of its wall and its lumen was occupied by small cells and débris, evidently clot undergoing organisation. Other vessels in the bulb showed similar changes, but in many they were more advanced and the wall had broken down and small hæmorrhages had recurred. A description of one in the superior medullary velum must suffice. The wall of the vessel was infiltrated with small cells, but at the point of section it was intact. The sheath was infiltrated with round cells and in places with star-like cells many of which were degenerating and cystic; among them were blood corpuscles and around the sheath was apparent softening of the neighbouring tissue and extravasation of blood. At the level of the lower border of the pons there was a small area of apparently gummatous nature, now probably necrotic, occupying the orifice of the olivary body. It was surrounded by an area of small cell infiltration without dilatation of the vessels. It lay close to the fibres of the hypoglossal nerve, but these appeared to be unaffected by it and their nucleus of origin showed no sign of the *réaction à distance*. The issuing bundles of the twelfth and more especially the spinal accessory and vagus showed infiltration extending from the meninges which was most marked around the vessels that supply them. Further upwards the periphery of the nervous tissues was invaded at numerous points by microscopic gummatous ingrowth from the pia mater, both in association with blood-vessels and without them. The nuclei of the seventh nerves appeared to be fairly healthy on each side. The fifth nerve was much infiltrated and the cells in the upper and lower nuclei showed vesicular degeneration, though belonging to neurons not directly affected. Beneath the left inferior quadrigeminal body anterior to the outer part of the posterior longitudinal tract was an area similar to that already described in connexion with the olive. In this instance considerable development of fibrous tissue had occurred and in the neighbourhood the vessel walls were much thickened and infiltrated with small cells. This area interrupted some of the fibres of the superior cerebellar peduncle passing from their lateral position to their decussation at the middle line. Weigert-Pal preparations, as in the former instance, revealed no tract of degeneration, the lesion being probably of too recent a character. In the fourth nuclei on each side numerous degenerated cells were seen which had lost the chromatophilic granules altogether and the nuclei of which were dislocated. Unfortunately, the centres for the third nerve were destroyed at the necropsy and the examination could not be pursued further up.

With regard to the spinal cord throughout there was more or less light diffuse myelitis which was most marked at the periphery and round the central canal. There was much cellular exudation around the nerve roots and vessels. The pia mater was unequally involved. The cells in the anterior horn stained well and were fairly normal throughout, but those of Clark's column showed excessive pigmentary change, displacement of nuclei, and diffusion of chromatin; some cells showed no structure and stained yellowish; they appeared to be diminished in number on the left side. In the lower lumbar and sacral region changes occurred in the posterior columns which were almost systematic in character. On each side, separated from the septum by a layer of neuroglia which had undergone pathological thickening, were the club-shaped tracts, named septo-marginal by Bruce; that on the right was larger than the left, the posterior part of which had been affected by the neuroglial overgrowth. External to these were the posterior ascending columns, well marked off by a band of neuroglia and characterised by not extending so far backwards, an observation similar to that made by Bruce in cases of locomotor ataxia. As we traced this tract (septomarginal) upwards it gradually disappeared from the surface and became unrecognisable in the upper part of the fifth lumbar. In the third sacral nerve roots we found that the tumour referred to in the naked-eye examination was fibromatous in nature, having the appearance under low magnification that a myoma uteri presents to the naked eye. In close relation to this were degenerated nerve-fibres. The left root also contained a mass of fibres which had undergone slight early degeneration. In all the lumbar nerve roots similar fibres were found.

All the nerve-roots and ganglia in the lumbar and the

upper sacral regions were examined. No differences of importance were detected between the two sides. The following were the chief changes observed and were equally common, practically speaking, to all. The presence of fine medullated fibres grouped in one sheath. These were found most markedly in the anterior roots and appeared similar to the fibres described as occurring in nerves undergoing repair. They were probable evidence, in the present instance, of a sub-inflammatory process. In the connective tissue cells and nuclei and in the lymphatics of the ganglia we found a deposit of fine golden-yellow granules which had in all probability been laid down by chronic congestion or were the remains of degenerated nerve cells, the débris of which had been absorbed by wandering cells to be again deposited in the lymph spaces. It was not an uncommon thing for the yellow pigment of nerve cells to retain the dye in a Weigert-Pal preparation, especially if the decolourisation had been slightly imperfect, but in none of our preparations had this occurred, hence it was probable that the former hypothesis was the more correct. A chronic degenerative process appeared to be going on in the cells; the endothelium forming the wall of the cell spaces proliferated and the space and cell together gradually grew smaller and smaller till the cell disappeared altogether. The blood-vessels showed infiltration of their walls. The cyst of the second ganglion contained a few degenerated cells in its wall, but in its cavity were contained the motor fibres of the root, so that the cyst had apparently been formed by some lymphatic obstruction in the sheath of the motor fibres and had expanded and destroyed the neighbouring ganglion. From the characters of the sub-inflammatory processes which we have now detailed, from the great extent of these lesions, and from their variety we have little hesitation in saying from the pathological evidence alone that the process was a syphilitic one.

Remarks.—It now devolves upon us to ascertain how far the physical signs are explicable through the results of the pathological examination. Re the paralysis: the lesion of the left optic thalamus accounts satisfactorily for the facial paresis which in its distribution corresponds with the centric type. The ptosis is a phenomenon somewhat difficult to explain—indeed, more than one theory will here probably suit the case. It may be assumed that the syphilitic process had invaded the right third nerve. We know that ptosis is one of the commonest cranial paralyses due to syphilitic meningitis and it has occurred to us as not improbable that the nerve-fibres supplying the levator palpebræ are more sensitive to pressure than the remaining components of the nerve trunk. We have another example of this kind of selection in the abductor paralysis of the larynx occurring as a result of pressure on the recurrent laryngeal which contains fibres of antagonistic functions. The deviation of the head and eyes to the right is of typical cerebral significance and almost suggests a cortical irritation. In relation both to this symptom and to the ptosis already referred to we may consider here for a moment the two areas of necrosis described above. The upper one, by reason of its contiguity to the posterior longitudinal bundle, the associational fibres for conjugate movement of head and eyes, may alone account for the deviation, but it must also be observed that fibres of the superior peduncle are interrupted by this lesion and that internal arcuate fibres which pass by the restiform body into the cerebellum have been interrupted by the lower one. In a dog the left half of whose cerebellum had been removed by Dr. Risien Russell for one of us the following ocular phenomena were observed: on the left side there were deviation downwards and on the right side deviation downwards and outwards with ptosis partly corrected by associated over-action of the frontalis muscle. This grouping of symptoms shows marked points of relation with the present case. According to Ferrier, after section of one or other peduncle the chin is turned to the sound side. The bradycardia can be explained by the infiltration of the spinal accessory and vagus by syphilitic exudation. The knee-jerk presents an interesting problem; we find disease of a spinal ganglion and a posterior root below the centre for the knee-jerk though on the same side. At the same time the descending septo-marginal tract of Bruce is diminished on the normal side. No other spinal lesion was discovered to account for the abnormality (it may be mentioned that both sciatic and crural nerves appeared to be fairly normal under the microscope). We therefore incline to believe that the bulbar lesions were a cause also of the loss of knee-jerk. The ankle clonus may be explained by the general sclerotic state of the cord, though one would have expected it to be absent on the right side on account of the lesions on the nerve roots.

With regard to treatment, as Huchard[35] has pointed out, there are four indications in treatment directed to the arteries, brain, heart, and associated symptoms. 1. Iodides, trinitrine, and nitrite of amyl. 2. Ischæmia of the medulla must be combated by vaso-dilators such as nitro-glycerine, together with iodides and caffeine. He discountenances the administration of belladonna, ergot, and vaso-constrictors. In bad cases nitrite of amyl should be inhaled night and morning. Posture may be of value; the horizontal position may ward off attacks. Total inversion may be tried in some bad cases of syncope. There should be avoidance of exertion. Renal disease should be treated by milk diet. 3. Digitalis must be used with the greatest caution; Huchard considers sparteine and caffeine of more efficiency. Though the above-named author apparently finds no place for the successful exhibition of atropine in cases of bradycardia Somerville and Brunton[36] found it of much use in a case deemed to be functional and dependent upon toxæmia from a meal of fish, and it may not be out of place to quote the reasons upon which they based its adoption: "The cause of the bradycardia in this case may have been a poison affecting either the medullary portion of the vagus or its terminal branches or else irritation transmitted from the stomach along the afferent nerves to the medulla and thence reflected down the vagus to the heart. Supposing the condition to be reflex in origin the bromide of potassium, owing to its power of diminishing the activity of reflex centres generally and so upon the medulla, would be indicated, as thus the afferent impulses would be checked at the medulla and not transmitted down through the vagus. If, however, there was a special poison in the blood irritating either the roots of the vagus in the medulla or its ends in the heart the bromide would be of little use, but the belladonna would be successful, for atropine paralyses the nerve-endings of the vagus in the heart, so that no irritation of any part of the nerve can slow its pulsations." The importance of recognising any diathetic taint—i.e., syphilitic—is obvious, and derives encouragement from the improvement manifested under anti-specific treatment. A remarkable case of unilateral bradycardia reported by E. Moritz[37] (gummatous myocarditis) improved under treatment. Others also might be quoted. Morison[38] advocates the use of atropine in bradycardia of extra-cardial orgin. In our own case cardiac stimulants were freely used, but apparently with no effect, and the late appearances of the signs pointing to the neural origin of the bradycardia precluded the possibility of our adopting the anti-syphilitic treatment indicated by them with any chance of success.

[35] Archives Générales de Médecine, September, 1895.
[36] Practitioner, March, 1876, p. 186.
[37] Unilateral Bradycardia, Brit. Med. Jour., Epit., vol. ii., 1897.
[38] Loc. cit.

THE RÔLE OF INSECTS, ARACHNIDS, AND MYRIAPODS IN THE PROPAGATION OF INFECTIVE DISEASES OF MAN AND ANIMALS.[1]

BY GEORGE NUTTALL, M.D., PH.D.,
PATHOLOGICAL LABORATORY, NEW MUSEUMS, CAMBRIDGE, ENGLAND.

THOUGH a considerable amount of work has been done on the relation more especially of insects to the spread of infective disease, the subject has not until recently aroused the general interest it deserves at the hands of hygienists. In some recent publications[2] I have made an attempt to bring

[1] A paper read before the Tropical Diseases Section at the meeting of the British Medical Association at Portsmouth on August 2nd, 1899.

[2] This subject will be found exhaustively treated in my publications, "Die Rolle der Insekten, Arachniden (Ixodes), und Myriapoden als Träger bei der Verbreitung von durch Bakterien und thierische Parasiten verursachten Krankheiten des Menschen und der Thiere" (Hygienische Rundschau, Berlin, 1899, vol. ix., 72 pages with bibliography); "Die Mosquito-Malaria-Theorie" (Centralblatt für Bakteriologie, Abtheil. I., 1899, vol. xxv., 40 pages with bibliography); "Neuere Forschungen ueber die Rolle der Mosquitos bei der Verbreitung der Malaria" (ibid., vols. xxv. and xxvi., 20 pages with bibliography). See also the forthcoming volume of the Johns Hopkins Hospital Reports, Baltimore, 1899. Reviews of new work in connexion with the rôle played by mosquitoes in the propagation of malaria will appear from time to time in the Centralblatt für Bakteriologie.

together the very scattered literature on this subject, thinking that by so doing suggestions for future work might be given. The facts which have been established by the brilliant researches of Ross, Grassi, Bignami, and Bastianelli with regard to the rôle of various species of mosquitoes in the propagation of malaria have at last aroused more general attention to the part which insects may play in the propagation of disease, and it is probable that the new impetus given by these investigations will lead to fruitful researches in other directions. When we look at the work which has been done on insects as carriers of bacterial agents of disease we are struck by its relatively small amount, whereas an unlimited amount of experimental work has been devoted to the study of the behaviour of bacteria under various physical and chemical conditions in air, water, soil, food, &c. It is certain that insects may under certain conditions play a most important part, both active and passive, in the propagation of bacterial disease.

THE RÔLE OF INSECTS IN THE SPREAD OF BACTERIAL DISEASES.

1. *The passive rôle.*—Insects may play a passive rôle as carriers of pathogenic organisms. *Musca domestica* and allied species are chiefly to blame in this respect. Such flies are incapable of "biting," but may from the nature of the food which they seek carry pathogenetic bacteria about on their bodies or within their alimentary tracts, and deposit them on lesions of the mucous membranes or of the skin, or on food. Raimbert in 1869, Davaine in 1870, and many others since have attributed such a rôle to flies in the propagation of anthrax. Celli in 1888 reported experiments which showed that virulent anthrax bacilli were contained in the fæces of flies which had been fed with material containing these organisms. Proust in 1894 and Heim also in 1894 showed that certain beetles and their larvæ which are found on dried skins might serve to scatter the spores of anthrax. These observers found anthrax spores on the skins which were derived from animals that had died from anthrax as also in and on the insects named. The fæces of these insects, being light and powdery, are scattered by the slightest current of air. The presence of numerous flies during plague epidemics has been recorded by some of the older chroniclers. Yersin in 1894, working in Hong-Kong, noticed many dead flies lying about his laboratory where animals which had died from plague were examined. He inoculated an animal with the contents of one fly and noted that it died from plague. The fly was seen to contain bacilli morphologically identical with those of plague. He came to the conclusion that flies might serve as carriers of the germs and play a rôle in the propagation of the disease. Yersin, however, went too far when he concluded from the examination of this one dead fly that all the others had died from plague, as the insects might very well have died from lack of water or coming in contact with disinfecting solutions. In 1897 I made a number of experiments with flies which were fed with the organs of animals which had died from plague. It was found that such flies contained virulent plague bacilli in their fæces for 48 hours and even longer when they had received plague organs and then sterile food to eat. In one experiment flies were kept at a temperature of from 12° C. to 14° C. and it was found that they were all alive at the end of eight days. In two other experiments at 14° C. all the flies which had been fed on plague organs were dead by the seventh or eighth day. At a temperature of from 23° C. to 28° C. the infected flies nearly all died within three days. Though it is evident that flies die off more rapidly at high temperatures these experiments showed that they might live a considerable time whilst carrying plague bacilli in a virulent state. The practical conclusions to which these experiments lead are too self-evident to be mentioned here. From experiments on ants Hankin expressed the belief that these animals might serve to spread the plague by gaining access to the bathrooms in search of water or by defecating there. Nicholas in 1873 relates observations which he made in 1849 at Malta on the warship *Superb* which led him even at that time to conclude that flies might play a very important rôle in the propagation of cholera. Maddox in 1885 observed the cholera spirilla microscopically in the dejections of flies (*Musca vomitoria*) which he had fed with cultures of that organism. Tizzoni and Cattani in 1886 isolated cholera germs from three flies caught in the cholera wards at Bologna. Sawtschenko in 1892 fed flies with cultures and found the spirilla in the fæces after two hours. Simonds in 1892 found spirilla in a fly caught in the post-mortem room at Hamburg. He made a few experiments with flies which had been in contact with the intestines of cholera patients. After they had been removed the flies were rolled in gelatin tubes after intervals of from four minutes to one hour and a half had elapsed. All the cultures showed colonies of cholera germs. Macrae in 1894, working in conjunction with Simpson and Haffkine in India, observed how flies carried cholera germs to sterilised milk which had been purposely exposed in various places in a prison where cholera prevailed. Buchanan described the occurrence of cholera in a prison at a time when flies were numerous. Cholera appeared in the prison after a strong wind had blown the flies in numbers from the direction of some huts where cholera prevailed. The patients attacked were only those who received their food at the part of the prison nearest to the huts infected with cholera. Regarding typhoid fever Alessi had isolated virulent typhoid bacilli from the excreta of flies fed on cultures of the typhoid bacillus and it would seem that flies may infect food after they have fed on typhoid excreta. Flies may also act as passive carriers of infective agents in frambœsia by transferring the specific virus from diseased to healthy persons. Egyptian ophthalmia has long been ascribed to the intermediary agency of flies. The *Hippelates pusio* is believed to disseminate the disease termed "Florida sore-eye," and Dewevre concluded from his experiments that pediculi may also serve as propagators of impetigo.

2. *The active rôle.*—An active rôle may be played by blood-sucking flies in the propagation of bacterial diseases. Experimental evidence is wanting, though clinical writers report a certain number of cases of anthrax, septicæmia, pyæmia, and erysipelas as arising from the bites of flies. In the case of anthrax subjective sensations very frequently lead patients to declare that they have been bitten by an insect when this is not the case. In many cases infection may result from an infected fly being crushed by the person it has bitten. An active rôle has recently been attributed by clinical writers to blood-sucking insects in plague. Bugs and fleas were supposed to be the active agents here, but experiments made by myself on animals suffering from plague, anthrax, mouse septicæmia, and chicken cholera all gave negative results. In a large number of experiments where these insects were allowed to bite animals dying from the diseases named and then immediately afterwards transferring them to healthy animals not a single case of infection occurred. Though the dejecta of bugs contained virulent bacilli after 24 hours they did not contain them later. In fact, it was shown that both fleas and bugs digest various pathogenic bacteria which they have taken up with the blood of diseased animals. Simonds in 1898 went so far in his elaborate theorising as to conclude that plague bacilli may acquire a heightened virulence in the bodies of such insects. He assigned an important rôle to these insects in the distribution of plague but furnished no direct proof of his statements. The entirely negative results of my experiments should weigh more than any gratuitous assumptions. If a bug or flea filled with the blood of a patient containing plague bacilli were crushed and the skin scratched by nails soiled with the blood which it contained, infection might easily occur. It has been asserted that such insects, as well as biting flies, are capable of propagating recurrent fever, the *bouton de Biskra*, frambœsia, leprosy, tuberculosis, and yellow fever, but evidence in this direction is wanted before we can come to any definite conclusion in this respect. In the case of the three last-named diseases the evidence given may well be termed frivolous.

THE RÔLE OF INSECTS, ARACHNIDS, AND MYRIAPODS IN THE SPREAD OF DISEASE DUE TO ANIMAL PARASITES.

Insects, arachnids, and myriapods, while serving as intermediary hosts, may play a passive or an active rôle. 1. They play a passive rôle when they are devoured by a host of the parasite they contain. (Vide table.) 2. An active rôle is played when, as in the case of the tick in Texas fever and various mosquitoes in malarious affections of man and animals, they inoculate the parasite into a host by means of their probosces. 3. An intermediary position must be given to mosquitoes in connexion with *Filaria Bancrofti* and *Filaria recondita*, as they infect themselves by sucking the blood of the definitive host.

Insects, &c., without serving as intermediary hosts, may play a passive or an active rôle. 1. A passive rôle is played when insects, &c., transport the eggs of animal parasites and deposit them in food or other substances.

THE RÔLE OF INSECTS, ARACHNIDS, AND MYRIAPODS IN THE SPREAD OF DISEASES DUE TO PARASITES.

Some Animal Parasites and their Hosts.

Parasite.	Definitive hosts.	Intermediary hosts.	Remarks and authority.
Dypilidium caninum (L.).	Dog, cat, man (rare).	Larva of parasite in dog-louse (Trichodectes canis), dog-flea (Pulex serraticeps, Gervais), and Pulex irritans. Only in fully developed insects.	Melnikoff, 1869; Leuckart, Grassi, and Rovelli, 1888–9; Sonsino, 1888. Successful infection experiments.
Drepanidotænia infundibuliformis (Goeze, 1782, Railliet, 1893).	Gallus domesticus, Coturnix coturnix, Anas boschas, tame duck.	Cysticercus claimed to be in Musca domestica.	Grassi and Rovelli, 1888 and 1892. No infection experiments.
Tænia serpentulus (Schrank).	Various birds.	Geotrupes silvaticus (a dung beetle) claimed to contain cysticercus.	Von Linstow, 1893. No infection experiments.
Hymenolepis pistillum (Duj.).	Sorex araneus.	Glomeris (a myriapod) contains cysticercus.	Villot, 1877. Successful infection experiments.
Hymenolepis diminuta (Rud.).	Mus decumanus, Mus rattus, Mus musculus, Mus Alexandrinus, man (rare, only five cases known).	Various insects: Lepidoptera (usually Asopia farinalis the parasite found both in caterpillar and butterfly), orthoptera (Anmisolabis annulipes), and two adult coleoptera (Akis spinosa and Scaurus striatus).	Grassi and Rovelli, 1889. Successful infection experiments with feeding anisolabis to rats and man.
Hymenolepis microstoma (Duj.).	Mus rattus; Mus musculus.	Tenebrio molitor (mealworm).	Grassi and Rovelli, 1889, &c. Successful infection experiments.
Hymenolepis uncinata (St.).	Crocidura aranea.	Glomeris limbatus (a myriapod).	Blanchard, 1891.
Distomum ascidia (van Beneden, 1873).	Bats, Vesperugo pipistrellis, Vesperugo Nathusii, &c.	Cercaria develop in molluscs (Lymnæus stagnalis), bore their way out and penetrate into aquatic larvæ of various insects, remaining in them when they develop into flies.	Von Siebold, 1844; Von Linstow, 1887.
Distomum endolobum (Duj.).	Frogs.	Cercaria bore themselves into a number of aquatic larvæ of insects.	Von Linstow, 1887–1897. Successful infection experiment on Rana temporaria.
Gordius tolosanus (Duj., 1842).	Beetles (16 different species) harbour the second or large larval form of the parasite, the adult form of which is not parasitic. Fish? (Occasional pseudo-parasite of man.)	Aquatic larvæ of numerous insects.	Meissner, 1856; Villot, 1874; Von Linstow, 1893.
Gigantorhynchus gigas (Goeze).	Pig, boar, peccari.	Melolontha vulgaris (May beetle) and its larvæ, Cetonia aurata, Orictes nasicornis, in Europe; Lachnosterna arcuata in North America.	Schneider, 1871; Kaiser, 1887; Stiles, 1891.
Gigantorhynchus moniliformis (Bremser).	Cricetus vulgaris (hamster), Arvicola arvalis, man.	Blaps mucronata (a common beetle) contains encapsuled echinorhynchus.	Grassi and Calandruccio, 1888. Successful infection experiments on white rat and man (Calandruccio infected himself).
Filaria rytipleurites (Delongchamps, 1824).	Rats.	Periplaneta orientalis.	Galeb, 1878. Successful infection experiments.
Spiroptera sanguinolenta (Rud., 1819).	Dog, wolf, fox (?).	Periplaneta orientalis.	Grassi, 1888. Successful infection of dogs with cockroaches.
Spiroptera obtusa.	Mouse.	Tenebrio molitor.	Leuckart.
Filaria Bancrofti (Cobbold, 1877).	Man.	Mosquito. Spec.? (Manson), development observed by Sonsino, 1884, in Culex pipiens.	Manson, 1877; Lewis 1878; Sonsino, 1883. No infection experiments.
Filaria recondita (Grassi, 1890).	Dog.	Pulex serraticeps, Pulex irritans. Development also observed in a tick (Rhipicephalus siculus, Koch).	Grassi and Calandruccio, 1888, 1890. Infection experiments negative.
Pyrosoma bigeminum (Southern or Texas cattle fever).	Ixodes or Boöphilus bovis. The eggs of infected ticks give rise to young ticks capable of communicating Texas fever.	Cattle.	Theobald Smith and F. L. Kilborne, 1893. Successful infection of cattle by means of young ticks. Development of parasites in ticks not observed. On account of the analogy between Texas fever and malaria parasites, I have chosen provisionally to consider the tick the definitive host.
Proteosoma.	Ross's "grey mosquitoes" resembling Culex pipiens.	Crows, larks, sparrows.	Ross (Calcutta, 1898) describes life-cycle of parasite in mosquito. Successful infection through infected mosquitoes (July 7th, 1898), confirmed by Daniels, 1899.
Crescentic parasites of æstivo-autumnal fever.	Ross's "dappled-winged mosquitoes" at Secunderabad, Anopheles claviger, Nov. 28th, 1898, Anopheles pictus or superpictus, Anopheles bifurcatus, Anopheles nigripes, Anopheles pseudo-pictus, June 18th, 1899, in Italy.	Man.	Ross, 1898, observed first developmental stages. Grassi, Bignami, and Bastianelli observed complete development and carried out successful infection experiments on man.
Quartan parasites.	Anopheles claviger.	Man.	Grassi, Bignami, and Bastianelli, Feb. 5th, 1899.
Tertian parasites.	Anopheles claviger, Anopheles bifurcatus.	Man.	Grassi, Bignami, and Bastianelli, April 19th, 1899. Successful infection experiment.

Grassi made experiments on flies showing that they might transport the eggs of *Tænia solium*, *Tricocephalus*, &c., and Stiles states that he has seen the eggs of *Ascaris lumbricoides* undergo developmental changes in flies raised from maggots which had been fed with the eggs of the parasites during warm weather. Provided that flies take up the eggs in a sufficiently developed condition they might readily disseminate the parasite by dropping their excretions on food or falling bodily into it. 2. An active rôle is played when insects, &c., carry the agent of disease from one animal to another and inoculate the parasitic as in tsetse fly disease (Bruce). In the table accompanying this paper will be found a brief summary of our present knowledge of the part played by insects, myriapods, and ticks in the spread of diseases due to various animal parasites.

A CASE OF LEPROSY IN ENGLAND.

BY J. ROSS MACMAHON, M.B., C.M. ABERD.

I HAVE at present under my care a man, aged 35 years, who is suffering from leprosy. The case is not a marked one, yet it manifests undoubtedly characteristic features. This is not a matter of any exceptional note, but the point calling for attention is a really important entity in regard to the etiology of this disease in England.

The patient is one of a family of three sons and two daughters who all at the present moment enjoy good health except the man whose case is now under consideration. His father died last year, aged 65 years, from hemiplegia; his mother, 67 years of age, is still alive and is in fairly comfortable health; one of his brothers lives in Chicago and the remainder of the family are resident in this country. The man asserts that he has never left Britain, that he contracted the leprosy in England, and that he beheld in himself the first leper he ever wittingly saw.

This is obviously a point of importance and one upon which I should like to make a few comments. That a man who had never been beyond the confines of England, who belonged to a healthy stock, and who had no ascertainable intercommunication with any source of infection should become a leper leaves no alternative but to assume that he happened to meet with some source of infection within our own shores. Bearing on this point I would state that though I cannot boast of being in a favourable position for meeting with cases of any particular disease—to say nought of leprosy—I know personally of some eight or nine lepers in London.

How did this man become infected with leprosy? As an illustration of the facilities which exist for infection I may mention the case of a Russian married woman, 32 years of age, who was a leper, and afflicted with the most virulent type of the disease which it is possible to conceive. From head to foot she was one ulcerating mass with large anæsthetic areas, she had the typical leonine face, and she was bereft of several fingers and of all but two of her toes. From the ulcers copious sanious discharge was exuding, and her case was rendered the more loathsome by the abominable smell which emanated from her body. She had married an Irishman in Russia nearly 13 years previously and had been in this terrible condition for the last few years, sometimes better and sometimes worse. She never infected her husband, although he cohabited with her until three years ago. I was particularly careful to elucidate this point. I saw the woman in London about two years ago. She had crossed from her residence in Ireland to secure hospital treatment. On arriving in London she obtained a lodging in a small third-rate hotel. There she spent one night and I believe left to return to Ireland. It is notorious that in such hotels the bed sheets have in many cases to do service on more than one occasion and it is obvious, therefore, how in one way infection may be possible in London. I think it is a pretty generally accepted theory, although I am aware of one prominent authority who dissents from this view, that leprosy is conveyed by intimate contact with the source of the infection, and it is extremely interesting to find that the male or female leper can cohabit with a wife or a husband for years without imparting infection. I am aware of at least three male lepers and one female leper who are married and have been cohabiting with healthy partners for years without imparting infection to them. In connexion with this I have noticed the translation of a paper by Azuero[1] in which he remarks upon the fact that women do not shrink from cohabitation with lepers and that he has never known a case in which they were infected by coitus with them, but numerous authenticated cases demonstrate that other healthy males indulging in coitus with leprous women become infected. Azuero has observed 40 cases and Carrasquella over 100 cases in which the husband or the wife remained unaffected by the other's disease throughout a long married life. When I saw the man to whose case I have referred above I at once thought of the woman from Ireland staying at the third-rate hotel and the vision of the sheets crossed my fancy.

The knowledge that there exists even one person *who has contracted in England* this terrible disease—a disease which patients do their best to conceal—is sufficient warranty for publishing this case and for inquiring whether there are any more cases of leprosy contracted in England.

Kensington.

ANTI-TYPHOID SERUM IN THE TREATMENT OF ENTERIC FEVER.

BY T. R. J. COWEN, L.R.C.P. & S. IREL.

THE case described here may be worth recording as it seems to indicate that the anti-typhoid serum possesses properties of an antitoxic character as well as the bactericidal power claimed for it.

On Nov. 30th, 1896, I was sent for to see a man and I was told that he did not seem to be in his right mind. I found him to be slightly delirious with a temperature of 102° F. The tongue was a dirty brown in colour and vividly red at the sides and the middle. The patient had slight diarrhœa and the motions contained a good deal of blood. There was a troublesome cough and the expectoration was stained with blood. His head had ached very much for some days and he had not had any sleep for the last week. The urine was a deep brown in colour and contained a small quantity of albumin. The skin was hot but moist and on the abdomen were eight characteristic rose spots. Stethoscopic examination revealed the existence of congestion in the bases of both lungs. The pulse was full and bounding and the heart's action fairly strong, 120 in the minute. The abdomen was somewhat tympanitic, though not markedly so, with a good deal of tenderness over the gastric region and the whole of the lower part. A bacteriological examination of the fæces showed the typhoid bacillus to be present in considerable numbers. From the account given me by his friends he had probably been more or less seriously unwell for about a fortnight previously. I put the patient on the usual dietary and gave bromidia in half drachm doses every three hours, and suggested the use of the serum. His wife declined to allow me to use the serum, and asked me to treat her husband on the usual lines. I then ordered powders of salol and bismuth salicylate to be taken every three hours. Under this treatment the patient's condition seemed to improve considerably, the temperature falling in three days to normal and remaining normal for 36 hours. The headache disappeared, the tongue was cleaner, but the abdomen was more tympanitic than formerly, and the soreness became especially marked in the right iliac region. In spite of the apparent improvement I was not satisfied with his condition and prophesied a relapse. My prophecy was rapidly fulfilled, for the temperature suddenly shot up to 103°, the diarrhœa broke out afresh, and on the following morning the abdomen was painfully distended and several fresh rose spots had appeared. The lungs, however, had maintained their improved condition and the slight expectoration was free from blood. From this until Dec. 14th the case ran what may be called an ordinary course. Owing to the increasing weakness of the heart digitalis, strychnia, and brandy had to be steadily administered and the temperature, which constantly showed a tendency to reach a dangerous height, was kept within moderate limits by the use of the cold sponge. On the night of the 14th I received an urgent message to come at once as the patient was a good deal worse. I found that at 3 o'clock

[1] Revista Medica de Bogota, xx., 236.

that day he had been suddenly seized with a severe pain in the right iliac region, and since then had been constantly and distressingly sick. The abdomen was very much swollen and acutely sensitive to the touch, though strange to say he found that he could lie more comfortably with his legs stretched out than any other way. The pulse was thready and rapid, and his face had that anxious expression so characteristic of peritoneal mischief. I injected half a grain of morphia sulphate and prescribed half a grain of opium every hour for three hours and a grain every three hours after, an ice bag to the abdomen, ice to be constantly sucked, and nourishment in the form of zyminised meat and milk suppositories, with beef-tea, milk and brandy, to be administered by the bowel. The sickness soon ceased, to be replaced by a most distressing hiccough, the pain also disappeared, but the acute tenderness persisted. On the following evening the temperature touched 105°, but by a vigorous use of the cold sponge was brought down to 102·5°, falling at 4 A.M. to 100°. The hiccough now came on only in fits and starts and he was able to get a little sleep now and then. Most of the acute symptoms passed of gradually but the diarrhœa continued in a very severe form, and as there was a continuous discharge from the bowel I was compelled to resume the oral administration of food and stimulants. The temperature now alternated between 100° in the mornings and 103° in the evenings and he seemed quite unable to retain either his water or fæcal discharge His condition seemed to be steadily getting worse every day owing to the increasing exhaustion. His tongue became parched and dry and great difficulty was experienced in getting him to take any nourishment or stimulants owing to the presence of several ulcers in his mouth. Low muttering delirium was present, and the pulse was small and weak.

At this time his wife spoke to me about the treatment I suggested at an earlier stage of the disease, and said that if I thought it would do any good now she was willing that it should be tried. I told her that as its action was supposed to consist entirely in destroying the specific bacilli of the disease and not in acting as an antidote to the poison already in the system I feared that no benefit would be derived from it at so late a stage. In deference to her wishes, but with very little hope of any advantage, I decided to inject the serum. On the 30th at nine o'clock in the morning I injected three cubic centimetres of the serum, a supply of which Messrs. Burroughs, Wellcome & Co. courteously placed at my disposal for therapeutic trial. His pulse at this time was 112 in the minute, temperature 100°, and the strictest antiseptic precautions were used in giving the injection. For a day or two previously I had been able to keep the diarrhœa under control by the administration of ten-minim doses of tincture of opium every three hours, and if even a single dose of this was omitted the flow from the bowels commenced at once. I now stopped this dose and gave only the nourishment and stimulants in the form of beef tea, eggs, milk, and brandy, which he had previously been taking, and directed the nurse to take the temperature every three hours. On seeing him again at 7 P.M. I found that the chart indicated a temperature of 101° at 12 midday and a further rise to 103° at 3 P.M., while at 6 P.M. it had fallen to 102°, and when I took it myself I found it to be barely 100°—that is, three degrees lower than it was at the same time the four previous evenings. The patient had taken a fair amount of nourishment and stimulants and there had been no delirium during the day. The pulse was 108. I noticed that he seemed to have some difficulty in speaking, though his voice was stronger. He had only three motions during the day, the first two being quite liquid and white and the last somewhat more solid. I found on seeing him the following morning that there had been no rise of temperature, but that at 4 A.M. there had been a fall of half a degree to 99·5°. He had enjoyed several good dozes during the night and expressed himself as feeling "better" and "very much stronger." The bowels had acted twice during the night, both the motions being of a fairly solid character and rather dark. Considering his improved condition I decided to increase the dose of serum and injected, with the same rigid precautions, seven cubic centimetres. When I examined the chart in the evening I found that three hours after the injection, at 12 A.M., the temperature had again gone up, reaching 102°, and at 3 P.M. 103·5°. At 6 P.M. it had fallen to 102° and when I took it at 9 P.M. it was 100·5°. He again spoke of feeling stronger and had asked for nourishment. He spoke with great difficulty and seemed to be quite unable to form his words so that they could be understood except with the greatest trouble, the sounds he made in the effort to speak being very similar to those made by persons who have recently had their tongues removed. The abdomen was still tympanitic, but on palpation he did not complain of tenderness. The bowels had acted twice and both motions were solid. His pulse was 94 and much stronger. On seeing him again at 9 A.M. I found the temperature to be 99° and the pulse was 94. During the day he had four "fits" and while I was with him he had another. In character they somewhat resembled epilepsy. He first began to shiver violently, this continuing for about two minutes, then the muscles of his back and of his neck the flexors of his arms, and the extensors of his lower limbs, became strongly convulsed, his jaw began working, and the breath came in peculiar sibilant grunts. The eyeballs seemed to protrude and were turned inwards and much upwards. In a period varying from a half to one minute this ceased and he gave a long sigh, turned on his pillow, and lay quiet but not unconscious. A change seemed to have come over his intellectual faculties and he was apparently unable to grasp any idea. When given a pencil and paper to write down an answer to a question—his speech could not be understood—he would stare at it blankly and turn it over and over in his hand, seemingly distressed to know what to do with it. On the evening of that day his temperature had fallen to normal and from that time did not again rise. The bowels had acted again twice, but both the motions were solid. He had taken his nourishment regularly, but was a good deal troubled with flatulence and a feeling of distention after. His pulse was 84, much stronger, and he was feeling well. He had two fits during the day, but they were slighter and shorter in duration. During the day he had been somewhat troublesome, wanting to get out of bed and had struck the nurse when she endeavoured to prevent him. He could speak a little plainer, but his mind was still in an absolutely torpid condition. If asked a question he would pick out a word in it and repeat this over and over again to himself for a long time. I prescribed lactopepsin in powder, 10 grains three times a day, and decided not to repeat the injection. On the following day the digestive troubles had quite disappeared and he took his nourishment with a good appetite, earnestly craving for solid food. From this time the fits gradually diminished in frequency and duration, finally ceasing entirely. The increase in bodily strength was remarkably rapid and the greatest difficulty was experienced in keeping him in bed. His speech remained indistinct for some days but improved as the fits got better. The mind still remained absolutely inert and though he watched everything that went on around him he seemed to be unable to recognise the meaning of the simplest actions.

The peculiar features about the case are: firstly, the rise of temperature, which on both occasions of the injection took place within three hours; secondly, the remarkably rapid action of the serum in improving the general condition, with increase of bodily strength. The rapidity of the action would certainly seem to argue that a direct antidote to the toxins was either a constituent of the injection or that the formation of such in the blood took place with quite unexampled quickness. The difficulty of speech, with the subsequent occurrence of fits, apparently connected with the administration of the serum, was not, I think, directly connected with it in the light of cause and effect, but in all probability was due to an embolus in one of the cerebral arteries.

West Kensington.

ON STREPTOTHRIX INFECTIONS.[1]

BY ALEXANDER G. R. FOULERTON, F.R.C.S. ENG.,

BACTERIOLOGIST TO THE MIDDLESEX HOSPITAL AND LECTURER ON PUBLIC HEALTH IN THE MIDDLESEX HOSPITAL MEDICAL SCHOOL.

THE "ray-fungus" described by Bollinger in 1877 as causing actinomycosis in cattle and by Israel a year later as the cause of a similar disease in man, together with some allied micro-organisms, is now generally classed in the genus streptothrix of the sub-division of achlorophyllous

[1] An abstract of a paper read before the Pathological Section of the British Medical Association on August 2nd, 1899.

fungi which are known as hyphomycetes or mould fungi. Several writers have, however, classed the streptothrices amongst the schizomycetes or fission fungi, regarding the former as examples of pleomorphous bacteria. For this latter view an erroneous interpretation of observations is probably responsible. Round bodies (possibly of the nature of arthrospores) seen in the sporulating stage of the streptothrix mycelium have been taken for cocci; and short lengths of mycelium produced by artificial or accidental causes have been described as bacillary forms, as if they had been produced by a natural process of fission. Flügge's latest classification includes a new subdivision created especially for this genus, the achlorophyllous fungi being subdivided into (1) schizomycetes, or bacteria; (2) streptothrices; (3) blastomycetes, or yeast fungi; and (4) hyphomycetes, or mould fungi. But this new subdivision seems unnecessary, since the streptothrices appear to belong naturally to the last subdivision.

Various streptothrices have been described as pathogenic for man. Thus there are (1) streptothrix actinomycotica, the original "ray fungus" of Bollinger and Israel; (2) streptothrix maduræ of Vincent, which possibly includes two varieties or species occurring in the lesions as "black" and "ochroid" grains respectively; (3) streptothrix asteroïdes of Eppinger, isolated from an abscess in the neck of a man who had died with a cerebro-spinal meningitis of undetermined causation; (4) streptothrix Foesteri of Cohn, found in concretions in the lacrymal canal of man; (5) streptothrix aurea of Dubois Saint-Sévrin, described as the cause of a conjunctivitis in man, and possibly identical with streptothrix aurantiaca isolated by Rossi-Doria from the air; (6) streptothrix odorifera of Rullman, isolated from some sputum and possibly corresponding with streptothrix Foesteri of Cohn, with streptothrix alba of Rossi-Doria, and with a similar streptothrix isolated by the writer from polluted water; and (7) streptothrix pseudo-tuberculosa hominis of Flexner, a fungus as to the exact nature of which there is some doubt, as it was only observed in the tissues and no cultures were obtained. Another species, streptothrix farcinica of Nocard, was isolated from the lesions of *farcin du bœuf*, a disease which is described as occurring amongst cattle especially in France and Guadeloupe. Various other streptothrices have been isolated from air and water by Gasperini, Sauvageau, and Radais, Rossi-Doria, and others. Some of these are pathogenic for lower animals when tested by experimental inoculation. In addition to these fungi definitely classed as streptothrices, so-called "streptothrix" or "mycelial" forms have been described as occurring in pure cultures of the bacilli of diphtheria and tuberculosis. I have certainly observed well-marked branching forms of bacillus tuberculosis under certain conditions of culture, and Coppen Jones, Babes, and others have suggested that what is known as bacillus tuberculosis is not a true fission fungus but belongs to the streptothrices. Babes and Levaditi claim that they have observed definite "actinomycotic" masses of mycelium with "clubs" in nodules on the meninges of rabbits after intracranial inoculation with cultures of bacillus tuberculosis. At present I prefer to consider such occasional branching forms as due to some abnormality in the growth of a fission-fungus, rather than as evidence justifying the inclusion of the organism amongst the streptothrices. But I think that this particular point is one which requires very careful further investigation, especially in the case of bacillus tuberculosis.

With regard to the disease known as "actinomycosis" in cattle and man it had long been thought that the condition so recognised clinically might be caused by more than one species of streptothrix, the anatomical results of infections by which might well be very similar. Thus Gasperini had described three varieties or species causing actinomycosis in cattle. Wolf and Israel isolated from human actinomycosis a streptothrix fungus which differed from streptothrix actinomycotica in that the growth under anaerobic conditions was very free, whilst in the presence of oxygen it was very scanty. Levy isolated from five cases in man a streptothrix which resembled that of Wolf and Israel in its free growth under anaerobic conditions. Kruse recognises two species as causing actinomycosis: (1) streptothrix actinomyces of Rossi-Doria, an aerobic fungus; and (2) streptothrix Israeli, an anaerobic fungus; and a number of other writers have described cases which clinically present the features of actinomycosis, but which are caused by parasites which differ sufficiently from streptothrix actinomycotica to entitle them to be regarded as separate species. The following case appears to be one of this sort and the streptothrix fungus isolated from it could not be identified with any of the species previously described.

The patient, a woman, aged 46 years, was admitted into the Middlesex Hospital under the care of Mr. Pearce Gould. She had suffered from a "winter cough" for about twelve years and then during the last two years the cough had been more or less continuous. Twelve months before her admission into the hospital an abscess had been opened surgically in the left axilla and there a sinus remained along which a probe could be passed upward and inward for about five inches. A month before admission a small, red, painful lump appeared over the left clavicle. This had increased in size and on admission there was a large subcutaneous swelling extending for about two inches above the clavicle and for from two to three inches below it. The swelling presented a nodular surface; the skin covering it was of a deep red or purple colour marked here and there by small yellow pustules and by small punched-out ulcers in places where such pustules had broken. The breath-sounds were weak all over the chest and almost inaudible over the left lung. A few râles could be heard over the right lung. Expectoration was frequent and the sputum was rather thin and tinged occasionally with blood. In the sputum and in pus from the skin-lesion small yellow grains were found which on microscopic examination proved to be the mycelial masses of a streptothrix fungus. Several specimens of sputum were examined for bacillus tuberculosis with a negative result.

The streptothrix fungus was obtained in pure culture on glycerin-agar from the pus of a freshly opened pustule. The rate of growth was very slow, a colony springing from a single "grain" attaining at the end of three months a diameter of about 0·3 centimetre. The growth had a distinct resemblance to that of bacillus tuberculosis, the colonies being of a dirty white colour, with a heaped-up, dull, dry-looking surface. The substance of a colony after about eight weeks' growth was quite loose and almost friable; but the growth had penetrated some little distance below the surface of the medium. At this age the growth consisted of masses of branching mycelium which was mostly in the sporulating stage and broke up very easily. In still older cultures practically all trace of mycelium had disappeared and was replaced by masses of small spherical bodies which were taken to be of the nature of spores. From the original tubes on glycerin-agar sub-cultures on other media were made, but on this second set of tubes growth was still more scanty. In the next series of sub-cultures but little evidence of growth of any sort was obtained. Growth on horse serum and ox serum was very small in amount and some peptonisation apparently occurred as the culture sank gradually into the serum. In peptone beef-broth growth occurred in small, discoid, whitish colonies not larger than a pin's head, the medium meanwhile remaining quite clear. All these cultures were obtained under ordinary aerobic conditions at a temperature of 37° C. Tubes of glycerin-agar incubated under anaerobic conditions showed no evidence of definite growth. Two rabbits inoculated with sub-cultures in peptone beef-broth survived for two months and when killed showed no lesions which could be attributed to the inoculation.

Since this paper was written Hayo Bruns of Strasburg has published[2] an account of a somewhat similar streptothrix. Bruns notes that a fungus also similar to the one which he describes had been recorded by Berestnew as occurring in what the latter terms a case of "pseudo-actinomycosis." Bruns very rightly objects to the use of this term and considers that the streptothrix in question belongs to a new species.

Sutton, Surrey.

[2] Centralblatt für Bakteriologie, Band xxvi., No. 1, July 8th, 1899.

VACCINATION RETURNS.—At the meeting of the Truro Board of Guardians held on Sept. 7th the vaccination returns showed that 335 children had been vaccinated during the first six months of 1899 in the districts of St. Agnes and Kea, nine conscientious objections were allowed and four summonses were issued. In the Rosland district there had been 309 vaccinations, 10 objections were allowed, and two summonses were issued. There were 10 defaulters at present. In St. Mary's district, which includes Truro, 352 vaccinations had been performed, as compared with 30 during the corresponding period of 1898. In this district about 2500 children are still unvaccinated.

ON THE VARIOUS DOMESTIC REMEDIES, WITH THEIR EFFECTS, USED BY THE PEOPLE OF INDIA FOR CERTAIN DISEASES OF THE EAR.[1]

BY H. J. DADYSETT, L.R.C.P. & S. EDIN., L.F.P.S. GLASG.,

CONSULTING AURAL SURGEON, CHURCH GATE MEDICAL HALL, FOR EAR, THROAT, AND NOSE DISEASES, BOMBAY.

DISEASES of the ear are not so common in India as in cold countries. There are, however, certain complaints from which people of India, whether rich or poor, do suffer, due in most cases to their habit of sleeping with their beds close to the windows, which are generally kept open, and thus exposing themselves to draughts. Again, poor people and domestic servants sleep on open verandahs and are thus exposed to cold draughts and chilly winds. The diseases due to this cause are myringitis and furuncles in the meatus auditorius externus and internus. In my practice for the last seven years as an aural surgeon in Bombay I have had to treat a large number of patients suffering from the above complaints and on inquiry I found that before they came to me they had tried various domestic remedies, consisting of various simple or medicated oils, juices of plants, powders, &c. Once my attention was drawn to this subject I began collecting information in connexion with it and the following notes I hope will be found interesting.

1. *The bulb of Allium sativum* (*garlic*).—It is boiled with salad oil and the oil when cooled is dropped into the ears for relieving the pain due to myringitis or furuncles. I believe it has a temporary soothing effect in some cases, but in others I have observed that it does more harm than good.

2. *Sesamum oil or tull-tella.*—It has been used mostly by people belonging to the Ghatty caste to soften the cerumen when there is much gathering in the ears. I think it has the same effect as the ordinary olive oil.

3. *Oil of Andropogon citratus and dhuprel oil* (consisting of various bland oils with a number of aromatics used as hair-oil).—These oils have been largely used by the Parsees for deafness and noises in the ears. The noises in the ears do sometimes disappear under this treatment due, I believe, to the oil having the power to soften cerumen. The ear is generally syringed with water after the oil has been dropped into it.

4. *Sweet-oil boiled with Ptychotis ajvan.*—It is used mostly by the Mahomedans for noises in the ears under the belief that it relieves the congestion of the middle-ear. I think it has some effect in relieving the noises.

5. *The juice of the petals of the Calendula officinalis* (*marigold flowers*) *known as "gulgotta."*—It is used in catarrhal deafness, but I have never seen a single case of recovery under this treatment.

6. *The juice of the leaves of Ruta graveolens, called by the natives "sitab."*—It has been used for relieving earache. I have seen some patients benefited by this juice.

7. *The juice of the leaves of Anona squamosa, known in India as "andoos" or "sitaful."*—It has been used by Wagri women in India in earache arising from various causes. They first pour the juice into the ear and then with a hollow copper or brass tube suck out worm-like bodies from the canal. This, of course, is a trick practised upon ignorant and credulous people. The worm-like bodies are simply pieces of vermicelli. This practice of what they call removing worms from the ears is rather common in India and these Wagri women make their living by it.

8. *The juice of pansupari.*—It is syringed into the ears by ignorant Hindoos belonging to the Ghatty caste for relieving earache. The juice is produced by chewing together areca-nut—known as "betel-nut" (*sopari*)—and the leaves of chavika-betel (*pan*). It is a common practice in India to offer *pansupari* to a friend on a visit just as a European would offer a cigarette in Europe. I have never seen a single case benefited by its use.

9. *Ginger and onions.*—The fresh juice of *Zinzibar officinale* (known as "*adoo*") or of *Allium cepa* (known as "*kanda*") is dropped into the ears for relieving earache. This is a favourite remedy with Parsee women for very young children. It has some effect in relieving earache.

10. *The juice of the leaves of Ocimum sanctum, known as "toolsi."*—It is used by the Ghatties for earache with some benefit.

11. *The juice of the mint* (*Mentha sativa*), *known as "phudina."*—It is used for dry catarrh of the ear without any benefit.

12. *The juice of the leaves or flowers of Jasminum grandiflorum, known as "chumpeli."*—It is boiled with sweet-oil and used in acute suppurative inflammation of the middle-ear. I have seen only one case in which it was used without any good result.

13. *The fruit of Tricosanthes palmata, known as "kaundala."*—It is boiled with cocoa-nut oil and used for stopping fœtid discharges from the ears. I have never seen a single case in which it has done any good.

14. *The juice expressed from the leaves of Cleome viscosa and known as "tilvun."*—It is used for otorrhœa and deafness in the Concans, mostly by the Hindoos, without any benefit.

15. *The juice of the leaves of Datura alba and also that of the lily.*—These are used for relieving earache by women of the Ghatty caste in India with temporary relief.

16. *Tea.*—Warm infusion of tea is syringed into the ear in cases of pain due to furuncles. It has a temporary soothing effect similar to that obtained by syringing the ears with warm water. The tannin contained in the tea, however, acts as a mild astringent.

17. *The leg of peacock.*—It is boiled with ground-nut oil and used in chronic catarrhal deafness. This remedy is recommended mostly by *bawas* and *jogis*, a sect of Hindoo hermits or asetics who are supposed to be well versed in jungle medicines. I have never come across a single case either cured or relieved of the deafness by this remedy.

18. *Cat's urine and urine of newly born infants.*—It is poured into the ears in otorrhœa to reduce the discharge. It has, however, in many cases, caused tympanic and mastoid abscesses which had to be opened. I have never seen or come across a single case of cure under its use.

19. *Dead scorpions.*—These are boiled in sweet-oil and put into the ear by Madrasee women in India to relieve earache. I have never seen any good effect.

20. *The gall-bladder of the young sheep.*—It is boiled with sweet-oil and the oil is then filtered and dropped into the ear slightly warmed. It is used in deafness brought on by dry catarrh of the ear. I know of two cases in which the oil was used by a Borah hakim without any benefit. On the contrary, the deafness increased and the patient had to consult me for treatment.

21. *Honey* (*Apis mellifica*).—It is used by old women for otorrhœa. For this purpose a plug of cotton-wool or cloth is smeared with honey and introduced into the meatus, but it gives no permanent relief.

22. *Milk specially of a primipara.*—It has been dropped into the ears to relieve earache in children. I have seen some good to result from its use.

23. *Eau de Cologne.*—It has been poured into the ears for relieving earache. It is commonly used by the people of India; and I have seen many cases in which bad results have followed its use—such as meningitis, mastoid abscesses, otorrhœa, &c.

24. *The otto de rose and the essence of jasmine.*—These are commonly dropped into the ears for catarrhal deafness and earache, mostly by Bhatias and Khojas. I have seen some temporary benefit from their use.

25. *Assafœtida.*—A small piece is introduced into the ear for relieving earache, without the least benefit.

26. *Powder made of Sepia officinalis, known as "summudarfin" and found on the seashore in India.*—A powder of it is insufflated into the ear in otorrhœa. This powder has some effect in drying up secretions. It is commonly employed by the Hindoos.

27. *The red dry powder known as "kunkun"* (*red powder obtained from the rhizome of Curcuma longa*).—It is used by the Hindoos for decorating the forehead, with a mark known as "*tila*" and also used by the Parsees on birthdays of their children as a mark of good omen. This powder is insufflated into the ear for otorrhœa through a quill pen. In 1896 I saw four cases in which the use of this powder had brought on mastoid abscesses which had to be opened.

28. *Mellwallas or "ear-cleaners."*—These are a class of quack-aurists. They are generally Mahomedans or Chinese

[1] A paper read at the Sixth International Otological Congress, held in London on August 10th, 1899.

by nationality and go about from street to street shouting aloud their arrival. They remove the wax from the ears by means of two thin pointed probes and many a time they perforate the tympanum under a mistaken notion that they are removing thin epidermal scales from it. They generally use sweet-oil mixed with tinctura lavendulæ co., 1 in 4, as drops for softening the cerumen before beginning the operation. I have had to treat a number of cases with perforations caused by these ignorant *mellwallas*.

Bombay.

CARDIAC THROMBOSIS AND ITS CAUSES.

BY CHARLES J. MARTIN, M.B., D.SC. LOND.,
PROFESSOR OF PHYSIOLOGY IN THE UNIVERSITY OF MELBOURNE;
AND
GEORGE E. RENNIE, M.D., M.R.C.P. LOND.,
LATE PATHOLOGIST AND PHYSICIAN TO THE PRINCE ALFRED HOSPITAL, SYDNEY.

IN the course of post-mortem work one cannot fail to be struck with the variation in the appearance and condition of the blood in the heart in different cases. We believe that not sufficient attention has been paid to this subject and that in the light of the large amount of experimental work which has been done in recent years on the blood and its coagulation we are of opinion that the current text-book teaching on this subject is imperfect and to some extent erroneous. We think that the ante-mortem coagulation of the blood in the heart or cardiac thrombosis is more often the immediate cause of death than a result of the mode of death. A survey of the text-book teaching exhibits a considerable amount of confusion, even regarding the fundamental point—viz., whether white fibrinous clots are of ante- or post-mortem production. We do not refer to the fibrinous deposits on diseased valves and ulcerated surfaces of the endocardium, as we are all agreed that these are of ante-mortem origin.

Thus, Hamilton,[1] speaking of cardiac thrombi, says: "The majority of clots which are found in the heart are of post-mortem origin. They are large yellow masses of fibrin most commonly occupying the left chambers and often extending into the pulmonary artery. In diseases of hyperinosis, such as pneumonia, they are particularly well formed and extend into the small branches of the pulmonary artery."

Coats[2] appears to hold somewhat similar views, for he says: "It is important to distinguish thrombi which have formed during life from mere post-mortem clots. It will be clear from what has gone before that the thrombi are mostly white or grey, but being formed largely of white corpuscles they are of a dead or opaque white or grey appearance. Post-mortem clots are sometimes pale from the sinking of the red corpuscles or otherwise, but they are gelatinous and smooth on the surface and mostly transparent, whereas the thrombi are firmer, drier, more opaque and granular on the surface. Thrombi also adhere to the wall to some extent, whereas the post-mortem clots do not, although in the heart, from getting entangled among the columnæ carneæ, they may have an appearance of adhesion."

Mitchell Bruce[3] speaks of coagula found in the heart as of two kinds, active and passive, according as they are formed during life or at or after death respectively. He describes passive coagula, or in other words post-mortem clots, as in some cases taking the form of "masses of firm whitish fibrin cleaving with some tenacity to the endocardium but not truly adherent, matted with the chordæ tendineæ and columnæ carneæ and projecting some distance into the pulmonary artery. In phthisis and other diseases proving fatal by very slow exhaustion these coagula are remarkably firm and fibrous and closely matted amongst the chordæ tendineæ, appearances which seem to indicate that coagulation was slowly proceeding for some time before the heart had ceased to beat." Bruce, however, admits that these fibrinous coagula are regarded by some authorities as of ante-mortem formation and as giving rise to severe symptoms by the embarrassment which they produce in the circulation.

Green[4] speaks of clots formed in the heart just before death as connecting post-mortem clots and thrombi. He says: "They are probably partly due to whipping of the blood by the chordæ tendineæ which tends to stagnate when the heart is too weak to empty its cavities. As would be expected they are more or less uniformly decolourised and though not adherent are often so much entangled among the chordæ tendineæ that they cannot be readily removed. From their longer duration and more complete contraction they are firmer and less watery than post-mortem clots."

Bristowe[5] says: "In all cases when the clots are purely fibrinous or when the fibrinous element is in excess or where the fibrin which has separated occupies any other position than the upper surface the separation of the fibrin, that is, the coagulation of the blood, must have taken place during life while the blood was still in process of circulation. That it is so must be evident from the consideration that there is no means by which stagnant fluid blood can in coagulation manifest separation of fibrin except upon its upper surface, still less achieve the perfect separation of the fibrin from all its other constituents. It is further proved by Dr. Richardson's examination of these fibrinous clots which shows that the amount of fibrin contained in them is several times greater than can be accounted for by the quantity of blood which the heart's cavities are capable of containing. It must not be forgotten, however, that all the fibrin met with in such cases in the cavities of the heart rarely, if ever, exceeds the amount of fibrin contained in the blood which passes through the heart in the course of half a dozen beats, and that, therefore, the whole of a large fibrinous clot may have been whipped out of the blood in the course of the minute or two of circulation which precedes death. It is certain then that such clots are formed during life, but by no means clear how long their formation actually takes."

From these statements it appears that some pathologists regard these white fibrinous masses as formed post-mortem while others consider them of ante-mortem origin. But there can be no doubt that firm white clots, which microscopical examination shows to be composed of fibrin, can only be formed from the blood in a state of motion and that the only form of white clot which can be produced post-mortem must be due to subsidence of the red corpuscles. At the post-mortem examination there can be no difficulty in differentiating white clots which have been formed in this way, by the fact that they consist of two layers, an upper white layer and a lower deeply coloured one.

We shall now briefly enumerate the various conditions of the blood met with in the heart at post-mortem examinations. 1. The blood may be quite fluid in all the chambers. This will, of course, in some cases be due to the examination being made a short time after death; but in other cases the length of time which has elapsed since death makes no difference. We shall refer to this point later. 2. The blood may be completely coagulated, and all the cavities of the heart may be filled with uniformly dark clot. This condition must be due to a rapid coagulation of the blood immediately after death, before there has been any time for subsidence of corpuscles. 3. The blood may be partly fluid and partly coagulated, and the clots may be uniformly dark in colour, or they may show a partial decolourisation, an upper whitish layer, and a dark lower one, due to subsidence of the corpuscles. In these cases coagulation must have been imperfect and also slow in onset. 4. In other cases one finds large white more or less translucent masses of fibrin most frequently occupying the right chambers and extending up into the pulmonary artery, and even extending for some distance into the smaller branches of the artery in the lungs. These masses are also found in the left ventricle and in smaller amount extending a short distance into the aorta. There may be in addition a deposit of dark clot or the rest of the blood may be fluid. 5. In still other cases we find a condition which may possibly represent an older stage of that described in the last section. We find firm white masses of fibrin, either granular in appearance or perhaps actually softened in the centre so as to resemble small bags of pus, projecting between the columnæ carneæ like small polypi, or forming firmer masses adherent at the apex of the left ventricle or else in the appendices of the auricles. These would suggest an intracardiac thrombosis at a former period. The rest of the blood in the heart may be either fluid or partly coagulated.

[1] Text-book of Pathology, vol. i., p. 622.
[2] Manual of Pathology, second edition, p. 68.
[3] Article, "Cardiac Thrombosis," Quain's Dictionary of Medicine.
[4] Pathology and Morbid Anatomy, sixth edition, p. 233.
[5] Article, "Cardiac Concretions," Reynolds's System of Medicine.

It is clear, then, that the conditions 4 and 5 must be produced by some cause or causes acting while the blood is still circulating; and we shall now proceed to consider the causes, or rather the conditions, of the body which are associated with intracardiac thrombosis.

Dr. Bristowe,[5] in the article already referred to, says: "What it is that determines the coagulation of the blood during life is by no means easy to determine. Dr. Richardson in a paper published a long time ago enumerates several classes of cases in which fibrin is peculiarly apt to be deposited during life in the heart's cavities, the most important of his classes being that of acute inflammatory conditions including pneumonia. We have no doubt that in all the cases which he enumerates fibrinous clots are not infrequently observed; but, indeed, they are constantly met with in the post-mortem room, not only in these but in almost every form of disease. They are by no means constant even in pneumonia. Mr. Henry Lee believes them to be characteristic of purulent infection of the blood. This, however, is obviously an error; for while it is common to meet with them in cases where no such infection can be suspected, in cases of pyæmia they are altogether exceptional. We shall not pretend to offer any satisfactory explanation of the causes of the formation of these ante-mortem clots in some cases and their nonformation in others. But we admit generally with Dr. Richardson that there are diseases in which from some cause or other there exists a tendency to the separation of fibrin, and further we may suggest that slowness in dying may in such cases to some extent determine the separation."

The statement of Coats[7] that "weakness of the heart, especially when associated with dilatation of its cavities, leads to imperfect emptying of its cavities and the blood forms eddies in the parts most removed from the general blood current. White thrombi often form in this way behind the columnæ carneæ and in the auricular appendages and if there is much dilatation near the apices of the ventricles" appears to fairly represent the current text-book teaching on the mode of formation of white thrombi in the heart. Sir J. Fayrer,[6] however, in a valuable paper on Intravascular Coagulation and Pulmonary Thrombosis, speaks of his experience of this condition in his practice in India, and he appears to us to have recognised the very important part played in intracardiac thrombosis by what we may call the chemical alteration in the condition of the blood. He repeats his opinion expressed 30 years ago that among the conditions which tend to determine this dangerous state of the blood, that which is so prevalent in tropical and malarial climates, more especially when any splenic complication exists, is a fertile cause of clotting; and that it frequently induces death by pulmonary thrombosis, not only in cholera, fever, and other diseases, but after surgical operations, not infrequently, even where the progress of the sufferer appeared otherwise favourable. He remarks further, "It has long been known that death may occur rapidly from this cause in puerperal patients, and that in diphtheria, cholera, and other exhausting diseases, it is by no means infrequent; and in such cases where the blood must necessarily be in an altered condition, and the musculature of the heart weak, although the precise nature of the change may be unknown, it is not difficult to understand why the fatal result should occur. But in cases where fatal cardiac thrombosis has supervened after surgical operations, when the patient appeared to be doing well, the explanation is more difficult."

Turning now to our own experiences and observations, in the course of a large number of post-mortem examinations within the last few years in which the conditions of the blood in the heart have been carefully observed and noted we have found cardiac thrombosis to have occurred with considerable frequency. In speaking of cardiac thrombosis in this paper it must be understood that we are referring to the white fibrinous clots which we have seen reason to believe can only be formed while the blood is still circulating and therefore ante-mortem. The amount of such clot varies very considerably in different cases. Whereas in some diseases such as pneumonia and septic peritonitis it is not uncommon to find the right side of the heart full of large masses of fibrin, in others there may be only a few shreds of fibrin entangled in the irregularities of the right auricle and ventricle.

[6] Loc. cit. [7] Loc. cit.
[5] Brit. Med. Jour., vol. i., 1893.

On tabulating the records of about 450 post-mortem examinations which we have made we find: (1) More or less cardiac thrombosis to have occurred in 42 per cent. of cases; (2) that 80 per cent. of cases in which we have found cardiac thrombosis died either from pneumonia or from suppurative diseases such as pyæmia or septic peritonitis; and (3) that in the same diseases in which cardiac thrombosis often occurs at other times the blood at the time of the necropsy was still fluid and had lost its spontaneous coagulability. It is obvious therefore that in pneumonia and septic diseases, conditions arise which determine the separation of fibrin from the blood while it is still circulating. It is an old observation that in pneumonia the coagulability of the blood is increased. It may appear extraordinary that in the same disease one should find at one time an abnormal tendency to clotting and at another time absolute disappearance of spontaneous coagulability. Experimental research during the last few years has, however, prepared one for this contradiction, and it is not only not surprising, but what one would expect under the circumstances.

In 1886 Wooldridge[9] found that by extracting with water the cellular elements of the body, and especially the leucocytes, from lymphatic glands or pus, he obtained amongst other bodies a proteid in solution combined with nuclein. This body has since been labelled a nucleo-albumin. The interest attaching to this nucleo-albumin for our present purpose consists in his further discovery that when injected into the veins of an animal it produces extensive intravascular clotting. He also found that in some cases where little or no thrombosis followed the injections the shed blood had partially or entirely lost its power to clot spontaneously. Wooldridge called the rise in coagulability the "positive phase" and the subsequent diminution of coagulability the "negative phase" of the action of nucleo-albumin. Wright[10] in following up the researches of this observer found that the amount of carbonic acid in the blood was an important factor in determining whether an injection of nucleo-albumins produced thrombosis. Clotting occurs in situations where the tension of carbonic acid is highest. By tetanising a limb the vessels in it thrombosed when the blood elsewhere remained fluid, and if after the injection of nucleo-albumin the animal was partially asphyxiated a very small dose was sufficient to ensure universal clotting in the whole vascular system.

Another important factor in determining the result of an injection of nucleo-albumin is the rapidity with which the solution is allowed to enter the circulation. We can produce either the positive or the negative phase with the same amount of nucleo-albumin simply by varying the rate of injection. This may be introduced in great quantity without causing thrombosis provided the solution be allowed to flow slowly into a vein.[11] Under these circumstances the blood has lost all spontaneous coagulability. The first portion of the injection raises the coagulability but not sufficiently to produce actual thrombosis. This increase in coagulability is temporary and is succeeded by the opposite phase—viz., diminished tendency to clot—and in this condition the blood is immune from the effects of the later portion of the injection.

The diseases which are associated with either an increase in blood coagulability (leading in some cases to thrombosis), or, on the other hand, with a diminution in coagulability, are those which are attended with a considerable disintegration of some of the cellular elements of the body. Under such circumstances the lymph flowing from the parts affected presumably contains more or less of the products of cell destruction, among them nucleo-albumins.[12] These bodies cannot enter the blood-stream without producing some effect. The effect they produce depends, as we have just mentioned, *inter alia*, upon the rapidity with which they reach the general circulation. If rapidly, the coagulability of the blood is raised and may be raised to such an extent that actual clotting occurs in those vessels where the tension of carbonic acid is highest. Accordingly one finds thrombosis most usually in the right side of the heart and in the pulmonary artery, very rarely after the blood has passed the lungs and lost its

[9] Du Bois Reymond's Archiv, 1886, p. 397; Croonian Lecture, Royal Society, 1886; Chemistry of the Blood, Kegan Paul, Trench, and Co., 1893.
[10] Journal of Physiology, vol. xii., 1891, p. 185.
[11] C. J. Martin: Journal of Physiology, vol. xv., 1893, p. 385.
[12] Lymph itself contains sufficient nucleo-albumins to occasion thrombosis if injected rapidly into the animal. Shore: Proceedings of the Cambridge Philosophical Society, vol. vii., part 6.

CO_2. The blood in the right side of the heart, in addition to being highly charged with CO_2, is submitted to a violent churning movement, due to the cordiac contractions. Such churning movement, or stirring, is one of the conditions which is most favourable to coagulation outside the body, and why the reverse should be supposed to hold in the vessels we are at a loss to understand. Owing to the presence of nucleo-albumin, excess of CO_2, and violent movement, separation of fibrin may occur. This is immediately whipped by the cardiac contractions, and the irregularities in the auricular appendices and the chordæ tendineæ of the ventricles act much in the same way as the whisks of an egg-beater and rapidly separate the fibrin from the blood. The former remains lightly attached to these surface irregularities, but is not really adherent. The course of the blood-stream draws the fibrin threads down from the auricle into the ventricle, where they adhere to other strands of fibrin. These are again drawn by the direction of the current into the pulmonary artery, thereby rendering both the auriculo-ventricular and pulmonary valves incompetent. Such a condition, however, does not necessitate immediate death; on the contrary life may be continued for some hours or days after this condition has apparently existed. If life continues the tough whipped clot receives a further coating of smooth shiny fibrin by gradual deposition, which may be found coating the original primary clot as a sheath.

The above description is not derived solely from a lively imagination. We have produced cardiac thrombosis in a large number of animals either by the injection of nucleo-albumins or of the venom of Australian snakes,[13] and although we are not in a position to say that we have watched the whole process, we have killed so many animals at different intervals after thrombosis has occurred that the above account represents the only conceivable view consistent with the facts. We have moreover had opportunities of examining patients suffering from pneumonia and septic peritonitis in which the circulation had suddenly been greatly diminished, the heart sounds altered in character, and the patient dyspnœic, although air was freely entering the lungs, so as to suggest that cardiac thrombosis had occurred. The necropsy in these cases demonstrated that such was indeed the case.

As before mentioned in some cases of the same diseases, instead of finding ante-mortem clots the blood is entirely fluid throughout the body and has lost all tendency to spontaneous coagulation. These cases, far from upsetting our explanation of cardiac thrombosis, afford additional evidence of its accuracy. Such a condition of the blood corresponds to what Wooldridge described as the "negative phase." When the injection of nucleo-albumins fails to produce thrombosis it invariably induces a change in the coagulability of the blood in the opposite direction—viz., a diminution in its spontaneous clotting power. One has only to introduce the nucleo-albumins sufficiently slowly and in sufficient amount to be sure of obtaining a condition in which the blood has lost all tendency to spontaneous clotting. The explanation of this double action of nucleo-proteids has been found by Lilienfeld[14] and we have been able to confirm his work as far as it bears upon the present question. Nucleo-albumins are capable of being split up by a variety of means into two moieties: (1) a nuclein, and (2) a proteid (Lilienfeld's histon). The first of these bodies, nuclein, is that which is concerned in the separation of fibrin from fibrinogen. The latter, histon, possesses a marked hindering action upon coagulation, leading in extreme cases to its absolute suspension. When the nuclein is injected alone thrombosis occurs. When the histon is alone injected a fluid non-coagulable blood results.[15] When the compound nucleo-albumin (Lilienfeld's nucleo-histon) is injected, the action of the nuclein radical occurs first causing a rise in coagulability and perhaps thrombosis; afterwards the histon, for some reason, obtains the predominating influence and a fluid non-coagulable blood results.

In many of the post-mortem examinations on cases of pneumonia and septic peritonitis the amount of cardiac thrombosis was so considerable as to be incompatible with life. Cardiac thrombosis must have been the immediate cause of death in a fair number of these, and we venture to suggest that, especially in pneumonia, death is not infrequently brought about in this way, and that treatment of patients suffering from this disease might with advantage be directed to lowering the coagulability of the blood, with a view to obviating this source of danger.

[13] C. J. Martin, loc. cit.
[14] Zeitschrift für Physiologische Chemie, Band xx., 89.
[15] Lilienfeld, Loc. cit.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

POISONING BY MERCURIC CHLORIDE (CORROSIVE SUBLIMATE); DEATH; NECROPSY.

BY W. H. COATES, M.B., L.S.SC. DURH., M.R.C.S. ENG., L.R.C.P. LOND., F.C.S.;
BARRISTER-AT-LAW.

THE interesting fact in the following case is that the patient survived the poison 12 days and died from perforation of the stomach. On August 15th a man, aged 42 years, a labourer, was harvesting at Patrington, and by accident he took up a bottle which he supposed contained tea but which in reality contained a solution of mercuric chloride that had been prepared for killing maggots on sheep. He drank a good quantity, possibly a teacupful (which probably contained about 40 grains), and immediately he felt a tightening pain in his throat; he went home (about a mile or so) and sent for me. He complained of intense pain in the abdomen and a tight pain in his throat, which looked red and inflamed. Incessant vomiting was present and three hours later diarrhœa set in accompanied by colic, clammy sweats, and prostration. On the third day he felt better, but he had a dull, heavy pain over the lower abdominal region which he described as a general uneasy feeling. All his teeth became loose and the gums bled freely. His face became much swollen. From the first day to the eighth day there was practically total suppression of the urine. A catheter was frequently passed with no result. He had constant dull lumbar pain. From the eighth day urine was secreted and gradually became more abundant, the œdema of the face diminished, and the teeth became firmer. The sickness and diarrhœa, however, continued the whole time. On the eighth day the patient commenced to vomit blood in quantities. Previously the vomit contained a slight trace only, but what had been a thick, sticky, and stringy vomit was now replaced by fairly bright-coloured blood. This continued until death, on August 28th, at 3 A.M. There was an excessive amount of saliva during the whole period of the illness and towards the close he complained of intense pain in the stomach referable to the cardiac end. He was conscious throughout. Mercuric chloride was detected in diminishing quantities from time to time in the vomit and the sputa. The stomach-pump could not be used owing to the constant and excessive vomiting. The white of an egg, milk, &c., were given at short intervals. Reduced iron was tried every two hours with no result except renewed vomiting. Afterwards palliative drugs were used for the sickness with negative results.

At the necropsy the stomach was found to be dilated slightly and it contained a little dark greenish-red fluid. There was no mercury present. The mucous membrane of the pyloric end was greenish grey with streaks of red infiltration. The cardiac end was of lighter colour. The mucous membrane was soft, almost gangrenous, and it broke down with the slightest touch. The greater curvature was dull red and a large patch of ulceration with a distinct perforation was present three and a half inches from the cardiac end of the organ. No trace of mercury could be obtained on analysis. The cæcum was sloughy green. The entire intestines were patchy with inflammation of a peculiar greenish grey in colour and smelling badly, and at numerous intervals there were patches of extravasation rapidly approaching gangrene. No trace of mercury was found on analysis. The liver was not enlarged and was rather shiny but externally there was no evidence of anything abnormal. Five ounces were macerated in hydrochloric acid and examined, when a minute trace of mercuric chloride was determined. The kidneys were rather large and small patches of extravasation were found on the surfaces. No evidence of mercury

could be obtained by analysis. The heart, lungs, and spleen were normal and contained no trace of mercury, but the lungs were slightly congested.

Patrington.

VIRILITY OF CRYPTORCHIDS.

BY R. MILNER SMYTH, L.R.C.P. & S. IREL.,
ASSISTANT MEDICAL OFFICER, DURBAN GOVERNMENT HOSPITAL, NATAL.

THE following notes, considering the few recorded cases, and the extremely rare occasions under which cryptorchids are met with, and also in relation to the sterile or non-sterile theories in the matter of procreative abilities in these cases which have been put forward by various authors can hardly fail to be of interest to the profession.

A man was admitted to the Durban Government Hospital on June 27th, 1899, suffering from strangulated incomplete inguinal hernia on the right side. On examination the scrotum was found to be empty and the left testicle could be easily felt in the inguinal canal close to the margin of the external ring. At this stage, owing to the extremely tense and painful condition of the rupture the right testicle could not be located. The symptoms being urgent, and any attempt at reduction by taxis considered unadvisable, the hernia was cut down upon and reduced. The right testicle was then found occupying a position in the inguinal canal, similar to the left, having been obscured by the loop of intestine. The testicle was allowed to remain *in situ* and the wound was closed, the patient making an uninterrupted recovery. An orchitis in the testicle on the affected side, however, resulted which remained for a week or two but was throughout painless.

The history of the case in relation to the question of virility is briefly as follows. Since childhood the patient had always enjoyed robust health and on admission was a strong, fully-developed, muscular man. Since puberty he had always been competent and had had full sexual vigour. He was married 16 years ago at the age of 18 years and had had five children, one of whom is now alive. He had never had any pain or inconvenience in the groin. The testicle which was seen and examined at the time of the operation was smaller than the normal size and soft and elastic on pressure. The penis was well developed. The scrotum was small and shrunken.

The question of procreative power and the capability of impregnation in this case appears undeniable and is in accordance with the statement made in Taylor's Manual of Jurisprudence (p. 674) that "it is satisfactorily established that crypsorchides are not necessarily sterile," and in support of this the author quotes several cases communicated to him and also reported by other writers. This view is opposed to that of Curling,[1] who states that "a male with this defect on both sides though often potent and efficient for sexual intercourse is incapable of impregnating the female." Also: "The facts which have been adduced as opposed to the conclusion that cryptorchics are sterile are chiefly instances in which they are reputed to have procreated children." From the clear history of this case and the straightforward statements of the patient, who had been seen by several local practitioners here, I do not think on this point there is any doubt whatever.

Durban, Natal.

A CASE OF EPISTAXIS DUE TO A LEECH.

BY A. J. MANASSEH, M.R.C.S. ENG., L.R.C.P. LOND.

A YOUNG child was recently brought to me who was suffering from nasal hæmorrhage. His mother said that the bleeding, which was from one nostril, had been continuous, off and on, for three days. The blood was dark in colour and soon clotted. No blood appeared through the mouth. The child looked anæmic, but there was no indication of any constitutional cause for the hæmorrhage. Blood was seen to be blocking the right nasal opening, and on looking into the mouth the end of a leech was found hanging over the posterior wall of the pharynx and undoubtedly it was clinging to the posterior nares. The leech was at once detached and removed by the forceps and the bleeding stopped immediately. Several cases of this kind have been noticed of late in this district, the leech being conveyed to the individual by drinking from springs. The above may be of interest to the readers of THE LANCET, especially those who work in a district where leeches are present in the water. I do not find that the leech is given as a cause of epistaxis in any of the text-books. It is also very common here to have patients suffering from hæmorrhage from the mouth, simulating hæmatemesis but caused by a leech in the throat, the blood coming either from the leech itself or from the injured mucous membrane of the pharynx.

Beyrout.

[1] "Sterility in the Male" in Quain's Dictionary of Medicine.

A Mirror OF HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv. Procemium.

GUY'S HOSPITAL.

TWO CASES OF UNILATERAL NASAL DIPHTHERIA.

(Under the care of Mr. C. J. SYMONDS.)

THE limitation of the diphtheritic process to one nostril is in itself a very striking feature in the two cases recorded below, and when once it has been admitted that a blood-stained non-membranous unilateral nasal discharge may be diphtheritic it is obvious that the diagnosis of such discharges can only be certain after a bacteriological examination. These cases are therefore of very great importance. In one respect they differ from most cases of nasal diphtheria and that is in the absence of any signs of severe constitutional disturbance from absorption of toxins, which is usually so striking a feature in diphtheria of the nasal passages. For the notes of the cases we are indebted to Mr. F. J. Steward, assistant to the throat department, Guy's Hospital.

CASE 1.—A boy, aged five years, was taken to the throat department at Guy's Hospital on July 28th, 1899. For 10 days he had had a blood-stained discharge from the right nostril. The boy was otherwise in perfectly good health and had not at any time seemed to be ill in himself. No history could be obtained of sore-throats in the family or in the same house. On examination the right nostril was seen to be blocked by a dried crust. On removing this slight bleeding occurred and a whitish-grey succulent-looking substance very like a mucous polypus could be seen. Portions of this were removed and proved to be œdematous membrane. The other side of the nose and the fauces were quite healthy. A blood-serum tube was inoculated from some of the membrane and after 24 hours' incubation a pure culture of Klebs-Löffler bacilli was obtained.

CASE 2.—A boy, aged seven years, was taken to the throat department at Guy's Hospital on August 11th, 1899, for repeated hæmorrhage from the left nostril of a week's duration. He was otherwise in perfect health and, as in Case 1, no history pointing to diphtheria could be obtained. On wiping away the dried blood from the left nostril slight bleeding occurred at once, but some white membrane could be seen in the nostril. This was of an opaque white appearance and not gelatinous as in Case 1. The other side of the nose and the fauces were healthy. A cultivation was made from the membrane, the result of which showed the presence of Klebs-Löffler bacilli.

Remarks by Mr. STEWARD.—The extreme importance of recognising the nature of such cases as the above from the point of view of spreading infection is, to my mind, a strong reason for publication. In the various text-books which I have consulted on the subject no mention is made of diphtheria confined to one side of the nose. As is well known diphtheria is not an uncommon cause of acute rhinitis attended with a blood-stained discharge and in many of these cases no membrane can be seen, being either out of sight at the posterior part of the nasal cavity or absent.

Although membrane was seen in both these cases it would seem probable from the above considerations that other cases of unilateral diphtheria occur in which no membrane would be visible. I have little doubt therefore that many such cases of unilateral nasal bleeding or blood-stained discharge have been passed over without the possibility of their being of a diphtheritic nature having been suspected. This is the more likely since there may be none of the usual general symptoms of diphtheria, for this is a special feature of some cases of nasal diphtheria and is exemplified in each of the above cases. I would strongly urge therefore the importance of bacteriological examination in all cases of acute rhinitis associated with a blood-stained discharge, whether general or limited to one nostril. In the latter case foreign bodies would of course be excluded by careful inspection. I have to thank Mr. Symonds for permission to publish these cases and Mr. W. C. C. Pakes for making the bacteriological examinations.

PROVINCIAL HOSPITAL, PORT ELIZABETH, CAPE COLONY.

A CASE IN WHICH LUMBRICOIDS WERE A CAUSE OF OBSTRUCTING THE SMALL INTESTINE; SEQUEL TO A CASE OF ALLEGED POISONING; NECROPSY.

(Under the care of Dr. DONALD M. MACRAE, late Resident Superintendent.)

THAT intestinal obstruction is occasionally caused by a mass of round worms is well known and it is not unlikely that their presence in the following case contributed towards the fatal issue, but we are inclined to think that it is improbable that death was in any way directly due to intestinal obstruction, for the duration of the symptoms from the very commencement until death did not exceed 18 hours and vomiting was completely absent until emetics had been administered.

A boy, aged six and a half years, who was taken to the Provincial Hospital, Port Elizabeth, on Sept. 10th, 1898, was alleged to have been poisoned. On inquiry it was found that the ground for the suspicion and upon which the statement was made was that the child—who to all appearances had been perfectly well an hour previously—was taken home to the mother by his playfellows in a state of collapse, with an empty bottle of varnish or furniture polish in his hand the contents of which, they said, he had swallowed. He was semi-conscious on admission to the hospital, and when Dr. Donald MacRae saw him (fully three-quarters of an hour after the event) the ward nurse had him in a hot bath and he was recovering from a convulsive seizure. Dr. MacRae at once acted on the information given. An emetic was administered and afterwards the stomach was freely washed out with tepid water by means of the stomach tube. This was supplemented by the employment of measures directed against the causes of convulsions in general. An attempt was made to empty the bowels by large enemata of warm water but without much success. Functional activity seemed to be in complete abeyance. Chloral and bromide of potassium were injected by the rectum and finally a large dose of castor oil was introduced into the stomach through the rubber tube. This also failed to act. At 8.30 P.M.—that is four and a half hours after admission—the patient regained consciousness, sat up in bed, and asked for food. He, however, relapsed into a state of drowsiness and continued thus for the greater part of the night. He was only completely conscious once again when he sat up in bed and talked, and at 5.30 A.M. he had a violent convulsive seizure. This somewhat subsided on the administration of bromide of potassium and chloral. There was no actual fit after this up to the time of death, but twitchings of the face and hands were observed. At 8.15 A.M. the patient died with signs of obstructed respiration. During life there was no odour of the breath or corrosion about the lips, mouth, or tongue, and the pupils were, as after death, dilated. The washings of the stomach consisted of the water introduced admixed with mucus.

Necropsy.—At the post-mortem examination it was found that the body was that of a boy, aged about six years, who had not been robust or well nourished. There were no discolourations about the neck, mouth, tongue, or body generally. On opening the abdomen the stomach and intestines appeared to be distended but were normal in colour. The stomach contained about an ounce of fluid matter consisting of oil and mucus. The mucous membrane presented no signs of acute irritation. There were a few minute patches of congestion, due, no doubt, to the vomiting and retching which occurred during life, and appearances also of slight catarrh. The organ was otherwise normal. The rectum was empty; the upper portion of the large intestine was distended and occupied by hard masses of inspissated fæces. The small intestine presented on its mucous membrane the appearances of ordinary catarrh. In its lower portion there was found a round worm 14 inches long and almost an inch in circumference. It was so coiled up and so disposed as to form an incomplete obstruction of the bowel. The obstruction was completed by the presence of two other round worms which lay parallel and occupied the open portion of the calibre of the gut. One was 12 inches long and three-quarters of an inch in circumference, and the other was six inches long. The right side of the heart was engorged. The right lung was dark and congested and the left lung was less markedly so. Both bronchi were free. The kidneys were both normal. The brain and membranes were congested.

Remarks by Dr. MACRAE.—The details of the above case may prove of some interest. To my mind it presents several remarkable features. From the history and particulars of the case—during life and after death—it will be seen: (1) that the symptoms exhibited by the patient when taken to the hospital were suggestive of, and compatible with, the cause of illness alleged by the parents; (2) that the real cause, as revealed by post-mortem examination, was an entirely different one and one the diagnosis of which must surely in most, if not in all, cases come from the pathologist rather than the physician; (3) that the symptoms observed during life are quite reconcileable with both the real cause—discovered after death—and that suspected or alleged when the patient was taken to the hospital for treatment; and (4) that the treatment adopted here affords an example of how, in employing and directing remedies and measures against a presumed or fictitious cause, one may happen to rationally combat the real one. Digestive disturbances, constipation, and worms are the most frequent causes of convulsions in children and young adults. Here the two latter causes existed without a doubt and one of them in the rare form described above. The evidence—post-mortem evidence—in all other directions was completely negative. The theory of poisoning was but the natural suggestion of a sudden and otherwise unaccountable illness and of maternal terror and suspicion.

BRISTOL GENERAL HOSPITAL.—The half-yearly general board meeting of the governors of this institution was held on Sept. 11th in the board-room, Mr. Procter Baker presiding. The chairman, in speaking of the financial position of the hospital at the end of June, said that subscriptions remained stationary. Donations, however, showed an increase of £2041 in excess of the corresponding period of last year, but then they had received two single sums of £1000 each. One of these sums had been given for a specific purpose—namely, a museum which was in course of construction. Legacies had decreased by £4000, but legacies were of course liable to great fluctuations. He was very glad to say that there was a very satisfactory feature in the income and that was an advance of some 20 per cent. in the collections made at places of worship. This increase was mainly due to the exertions of a committee and the actual increase in the sums collected was £117. Repairs had been a very expensive item, costing altogether £740. With regard to coming expenses the new museum would cost £350 over and above the £1000 given for this purpose. A new cage was wanted for the lift which would cost £100, and £500 was going to be spent on the theatre. The chairman referred to the fact that Bristol medical students could in future use both the infirmary and the General Hospital for study. After references to losses which the committee had sustained by death and resignation the chairman moved that the accounts should be audited and the report presented at the next half-yearly meeting. This was agreed to.

Reviews and Notices of Books.

An Introduction to Dermatology. By NORMAN WALKER, M.D., F.R.C.P. Edin., Assistant Physician for Diseases of the Skin to the Royal Edinburgh Infirmary. Bristol: John Wright and Co.; London: Simpkin, Marshall, Hamilton, Kent, and Co., Limited. 1899. Pp. 247. Price 8*s.* 6*d.*

THIS work, the preface tells us, is practically a reproduction of the lectures given by the author during several years in Edinburgh and is designed to aid in the systematic teaching of dermatology in that city. It differs, however, in no material respect from the already numerous elementary works on diseases of the skin excepting in one particular, which will be mentioned below. It goes over the same ground much in the same way, though it contains throughout a decided tinge of the modern German school of dermatology. The first chapter deals with Classification, Diagnosis, and Treatment. The classification adopted is based with slight modifications on that of Unna, who founds his grouping on the histological changes, and the teachings of this observer are strongly reflected throughout the whole work. Successive chapters deal with Anomalies of Sensation, Anomalies of Secretion (and we may note in passing that seborrhœa is not included in this chapter but among the "infectious inflammations"), Anomalies of Circulation, Traumatic Inflammations, Infectious Inflammations, New Growths, Retrogressive Changes (i.e., Atrophies), Malformations, Saprophytes, and Anomalies of Pigmentation. The largest part of the book, pages 71 to 205, is occupied by the class which the author describes as "infectious inflammations," and this he divides into six groups: (*a*) inflammations of the surface epidermis (cutaneous catarrh), such as scabies, miliaria, sudamina, impetigo, pediculosis, ecthyma, eczema, seborrhœa, psoriasis, several varieties of pityriasis, and ichthyosis; (*b*) inflammations of the deep epidermis (glands and follicles), such as acne, sycosis, favus, ringworm, alopecia areata, diseases of the nails, and lichen planus; and (*c*) inflammations of the corium, including erysipelas (sero-fibrinous), furunculosis (purulent), anthrax (necrosing), glanders, actinomycosis, and the granulomata which include syphilis, tuberculosis, leprosy, yaws, and mycosis fungoides.

It is a bold step, though by no means unwarranted by the facts, to include eczema among the infectious inflammations; but it is pure hypothesis to include in that group such conditions as sudamina, ichthyosis, and lichen planus. A classification based on histological characters is not altogether suitable for a students' text-book. The subject of baldness, for instance, is insufficiently dealt with, the only forms described being alopecia areata and alopecia seborrhœica, both under infectious inflammations. The author believes (p. 120) with Unna that "psoriasis in all likelihood is the extremely dry type of seborrhœic dermatitis," but he wisely adds, "this is by no means generally admitted." This latter statement is so true of the English school that it would have been wise to adduce more reasons for its acceptance than those given. The main argument advanced—namely, that psoriasis "in a great many cases commences on the scalp"—is discounted by the extreme frequency with which seborrhœa is found on the head of apparently healthy persons, a fact which the author himself points out in another part of the work (pp. 111 and 112) where he states that "in infancy seborrhœa is appallingly common." May not the two diseases be concurrent?

The pages devoted to the subject of general treatment are perhaps the most useful in the book. Here the routine and often perfunctory treatment by ointments is rightly condemned. There are, as Unna points out, four indications for the use of fats: (1) where the cutaneous fat is deficient (e.g., in ichthyosis, dry eczema); (2) where the epidermis is deficient in protective power (e.g., trade dermatitis); (3) as vehicles for medicaments; and (4) as directly healing agents. It is too often forgotten that the simple application of grease to the skin is not without effect, even apart from the fact that it prevents the natural evaporation, and that this effect in some diseased states of the skin is positively injurious. This is the case with many profusely weeping and acutely inflamed eczemas. The mode of preparing zinc and other gelatins is given and it would have been useful to learn the indications for their use, as in the case of ointments. The chief drawback to their more extended use in England is the trouble involved in their preparation and their application, which always devolves upon the practitioner. In foreign countries, where it is not considered derogatory for a physician to have a private hospital, such applications and dressings can be deputed to a skilled assistant, but in private practice or a consulting *clientèle* it is hardly possible to devote the necessary time.

In laying down general rules for diagnosis the author rightly insists that questions should be put simply. As an illustration of this he says that in the case of urticaria, for instance, the lesions should be referred to as "things like nettle-stings." This phrase reminds us of a remark once made by a well-known Cambridge professor who returned an essay to one of his pupils with the remark, "I like your essay; but as to the 'things' you so frequently refer to, are not 'things' what we send to the wash?"

A brief general description of the morbid histology of the skin would have been very useful to the student and would have made the subsequent chapters more intelligible, whereas words like "hyperkeratosis" used in the text (p. 13) and "mytosis" (p. 89) are nowhere described or defined. The brief description of the histo-pathology of eczema is good and the parakeratosis of Unna—i.e., perverted cornification of the epidermal cells—is well described. Eczema is defined on page 86 as follows: "Eczema is the term commonly applied to any wet or scaly inflammation of the skin of the cause or nature of which the observer is ignorant," and the author thinks it desirable to preface this definition by the statement that "it is not intended to be sarcastic." As regards the varieties of eczema two groups are recognised, lesional and regional. The lesional varieties are erythematous eczema, œdematous eczema, papular eczema, vesicular eczema, pustular eczema, and scaly eczema. The regional varieties are those commonly given by authors. As regards the treatment of this malady the author holds an even balance between the "internal" school who would treat all eczemas by diet and medicine and the "external" school who would neglect these means. He does not agree with Unna in claiming that all eczemas are seborrhœic. There are cases which are certainly eczema in which no seborrhœic element is recognisable, although the histological differences are apparently so slight that, paradoxical as it may seem, one description may suffice for both. In the description of pityriasis rubra (dermatitis exfoliativa) the author makes no reference whatever to the epidemic form of the malady, and he lays quite an undue stress on the absence of infiltration and thickening of the skin as a constant and diagnostic feature. Even Hebra, in his original description, refers to a "moderate inflammatory infiltration," and Kaposi and others describe "thickenings of the common integument."

The new departure referred to above consists in the introduction of 29 plates, about half of which are coloured. The author deserves some credit for the courageous way in which he has attempted to provide his readers with the element of colour in a work of moderate price (8*s.* 6*d.*); but it only shows how difficult it is to succeed in this direction without great outlay. These plates must have involved considerable expenditure of time and money, but we are bound to say

that the result is disappointing. The coloured illustration of acne (Plate XIII.) is extremely good, but the other coloured plates are but poor representations of the maladies which they are intended to represent. The coloured Plate VIII. (psoriasis) might represent many diseases and the uncoloured illustration of the same disease (Plate X.) is infinitely better. Plate XII. (ichthyosis) is most unfortunate and the colouring of Plate XIX. (lupus vulgaris) is hardly that of the disease. In Plate XVI. (lichen planus) the upper part is far too patchy and raised, but the little illustration inserted below of a life-sized lesion is admirable. The uncoloured plates are for the most part good, but many are too dark. There are 34 figures in the text and these are, generally speaking, of a very diagrammatic kind. The spores of ringworm fungus, for instance, stand out as black dots, having been reproduced, probably, from a stained specimen; and it would therefore give the student an erroneous idea of the distinctiveness of these spores as ordinarily met with under the microscope. Figure 25 represents the elements of the tricophyton fungus as having rounded instead of truncated ends. In conclusion, we must point out that a little more care in overlooking the proofs would have prevented some inelegancies of diction from appearing.

LIBRARY TABLE.

Golden Rules of Psychiatry By JAMES SHAW, M.D.R.U.I., Author of "Epitome of Mental Diseases." Bristol: John Wright and Co. 1899. 16mo. Pp. 74. Price 1*s.*—This is an excellent little work which gives a considerable amount of information on points to be remembered in the examination and diagnosis of insane patients. It refers concisely to the main clinical forms of mental disease and makes judicious and practical observations on the subject of prognosis and on the terminations of mental diseases. The advice given on the early treatment of mental disease is praiseworthy. The work is from its very nature—consisting as it does of "rules"—dogmatic, but the dogmatism is based on experience and a wide knowledge of facts. The concluding remarks on certification are useful and concise.

Pyorrhœa Alveolaris and its Relations to General Medicine. By JOHN FITZGERALD, L.D.S. R.C.S.I. London: The Medical Publishing Company, Limited. Pp. 57. In this small volume the author gives a brief yet lucid account of the condition termed "pyorrhœa alveolaris." His description of the pathology of the disease would have been more valuable if more facts had been given on which to base certain statements. For instance, we read: "There is also a pyorrhœa of gouty origin, in which the local necrosis of the peridental membrane is caused by gouty disease of one of the blood-vessels in its substance." Such a statement carries but little conviction unless it is accompanied by a certain amount of proof. He seems to accept, apparently without personal investigation, the statement of Pierce that in cases occurring in gouty subjects the concretions on the teeth near the apices consist largely of uric acid and urates. If we mistake not Dr. Black was unable to corroborate this statement and others have found it difficult to demonstrate the presence of urates in these deposits. The remarks on treatment are good. Although the book adds but little or nothing to our knowledge of this condition, it is extremely useful in bringing together in a concise form the principal facts which are at present known.

Dental Microscopy. By A. HOPEWELL SMITH, M.R.C.S. Eng., L.R.C.P. Lond., L.D.S. R.C.S. Eng. Second edition. London: The Dental Manufacturing Co. Philadelphia: The S. S. White Dental Manufacturing Co. Pp. 200. Price 10*s.* 6*d.*—The present edition of this work is a great advance upon the first. The subject-matter has been thoroughly revised and chapters have been added on the preparation of sections of the patho-histological tissues, on bacteriological appliances and methods, &c., so that the student has as complete a work on the subjects of dental histology and patho-histology as he could possibly wish for. Dental histology now forms part of the curriculum for the L.D.S. Eng., so to students preparing for that examination this book will be of much value.

JOURNALS.

The Journal of Physiology. Edited by Sir MICHAEL FOSTER, M.D. Lond., F.R.S., and J. N. LANGLEY, Sc.D. Vol. XXIV. No. 6, August, 1899. London: C. J. Clay and Sons. Price 6*s.*—The first article in this number is by G. N. Stewart, M.A., D.Sc., and Professor Torald Sollman, M.D., Demonstrator of Anatomy in the Western Reserve University, Cleveland, U.S.A., and is on the Proteids of Muscle. The authors show by the method of fractional heat precipitation that there are two proteids in muscle—a true globular paramyosinogen and an atypical globulin myosinogen—the former coagulating at about from 45° to 50° C. and the latter at from 50° to 65° C. Both pass readily into an insoluble modification, myosin. Paramyosinogen is the more abundant in dead muscle. No marked difference in the relative proportions of the two proteids was observable in the muscles of different animals or in different muscles of the same animal, or in rigor mortis. The second article is by Professor G. N. Stewart of the Western Reserve University, Cleveland, U.S.A., on the Effect of the Molecular Concentration and Electrical Conductivity of Muscle Extracts of Removal of the Proteids. The third article is by W. B. Warrington, M.D. Lond., and is entitled, "Further Observations on the Structural Alterations observed in Nerve Cells." It deals with the alterations observed in the cells of the spinal cord after section of the roots of the spinal nerves. The last article is by F. W. Pavy, M.D. Lond., F.R.S., and is an inquiry into the Effects on the Blood and Urine of the Intravenous and Subcutaneous Injection of Various Carbohydrates standing in Relation to Animal Life. Dr. Pavy shows that the sugar normally present in the blood does not consist exclusively of dextrose.

FOREIGN UNIVERSITY INTELLIGENCE.—*Berlin:* The title of Professor has been conferred on Dr. Karl Gebhard, *privat-docent* of Gynæcology.—*Bern:* Dr. Oesterle has been recognised as *privat-docent* of Pharmacology.—*Bologna:* Dr. C. Ghillini has been recognised as *privat-docent* of Orthopædics.—*Cracow:* Dr. Bronislas Kader of Breslau has been appointed Professor of Clinical Surgery in succession to the late Dr. Obalinski.—*Heidelberg:* Dr. Hugo Starck has been recognised as *privat-docent* of Internal Medicine.—*Jena:* Dr. Gumprecht has been promoted to an Extraordinary Professorship of Forensic Medicine.—*Königsberg:* Dr. R. Pfeiffer has been appointed Professor of Hygiene.—*Leyden:* Dr. G. Yelgersma of Arnheim has been appointed Professor of Psychiatry.—*Lund:* Dr. Iver Broman has been recognised as *privat-docent* of Anatomy and Histology.—*Pennsylvania (Philadelphia):* Dr. John H. Musser and Dr. Alfred Stengel have been appointed Professors of Clinical Medicine; Dr. Judson Daland, Dr. Howard Fussell, Dr. John K. Mitchell, and Dr. Frederick A. Packard, Assistant Professors of Medicine; and Dr. Gwilyam G. Davis Assistant Professor of Topographical Anatomy.—*Rome:* Dr. Angelo Becco has been recognised as *privat-docent* of Topographical Anatomy and Operative Medicine; Dr. Giuseppe Norsa as *privat docent* of Ophthalmology; Dr. Teodorico Rosati as *privat-docent* of Oto-rhino-laryngology; and Dr. Gustavo Gasperini as *privat-docent* of Hygiene.—*Würzburg:* Dr. Wilhelm Weygandt has been recognised as *privat-docent* of Psychiatry.

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 16, 1899.

THANKS mainly to the activity of the Anti-Vaccination League, or of one or two of its members, elucidation—or obscuration—of procedure under the Vaccination Acts is making rapid progress, so far as magisterial decisions are concerned. A Vice-President of the League, Mr. H. S. SCHULTESS YOUNG, barrister, is coming to be the recognised defender of prosecuted anti-vaccinationists, and he has evidently taken the trouble to make a most complete and careful study of the Acts and of every possible technical objection that can be taken against conviction for their infringement. In the course of his advocacy Mr. YOUNG, it is true, has raised some objections so transparently futile that even he can hardly have expected their success, but no doubt he has felt himself bound to do his best for his clients and to take full advantage of any weakness of the bench or want of experience of the solicitors opposed to him. Of course, if prosecutions were undertaken and carried out by Government officials versed in the subject merely frivolous objections would be less likely to be raised, but so long as the present system prevails it is only to be expected that an ardent opponent of vaccination will not hesitate to make the law's defects contribute to his own success. From reports of recent cases we may point out that, so far as concerns the courts before which the cases were brought, Mr. YOUNG has apparently succeeded in establishing the validity of two contentions. At Reigate he got 21 summonses dismissed on the ground that the public vaccinator is bound to call on the day fixed by his notice and that subsequent visits without a fresh notice are invalid. To a public vaccinator who is also a busy general practitioner liable to have his engagements interfered with by every kind of emergency work this, if adhered to by petty sessions in general, is no doubt a troublesome decision, but so far as we can see he must just grin and bear it, and no doubt he will keep it in mind when, or if, the scale of fees payable to him comes under revision. In the end therefore it is likely that the ratepayer will have to suffer for Mr. YOUNG'S activity. In this connexion it may be remembered that the Government Bill as originally introduced contained no provision for any preliminary notice by the public vaccinator, the new requirement having been accepted by Mr. CHAPLIN on the motion of one of his opponents. The other contention to which we refer is that notices by public vaccinators should, if transmitted by post, be registered. This is the decision of the petty sessions both at Corsham and at Hartismere. Here, again, the matter is one which ought to interest the ratepayers more than the public vaccinator, and in the end, indeed, even the ratepayers will be little affected as the fees for registration find their way into the national purse. So much for Mr. SCHULTESS YOUNG'S successes. At Corsham he failed in a ridiculous allegation that the public vaccinator must deliver the notice himself. A much more important failure was experienced in the same case, when he argued "that under Section 29 of the Act—whatever it might be under Section 31—the mere appointment of a vaccination officer was no authority for him to independently prosecute without the sanction of the board of guardians or the Local Government Board, which he had not received." After lengthened consultation the magistrates unanimously repelled this objection, and held that the vaccination officer was perfectly justified in taking proceedings. But, on the other hand, at Derby, two or three weeks earlier, an exactly opposite decision had been given by the justices there, this diversity of view affording an illustration of the fact that one court of petty sessions does not necessarily pay any heed to doings of another.

Much less defensible than Mr. SCHULTESS YOUNG'S proceedings are the endeavours of some prominent anti-vaccinationists to mislead the Leicester public regarding the action of their guardians in the matter of the appointment of a vaccination officer. At an open air meeting convened under the auspices of the Leicester Anti-Vaccination Defence Association one resolution, carried unanimously, was partly as follows: "And we beg to assure them [the board of guardians] of our unswerving support, both moral and financial, in whatever steps they may take ..... to prevent the enforcement of vaccination on an unwilling community." In presence of the conscience clause this of course is sheer fudge. So also is the statement in a letter published in a Leicester newspaper that the board "strongly object to parents whose children have suffered from disease and have only just escaped collapse and death from being prosecuted, fined, or imprisoned because they won't risk again going through a process which has done their children so much mischief." The Leicester anti-vaccinationists took the responsibility of strongly urging the people neither to apply for exemption certificates under the conscience clause nor to get their children vaccinated. Some 10,000, if we recollect aright, did not follow this precious advice, but many more thousands were foolish enough to give heed to it, or at any rate they did not take out certificates. There is little doubt that if a vaccination officer were now appointed he would quickly secure the vaccination of large numbers of the children of such parents, and so the Board have determined not to fill the appointment, and a strenuous endeavour is being made by such means as we have indicated to obtain the reputation of martyrs for the guardians and subscriptions for their defence. Most unfortunately the Government by omitting to make proper provision for the carrying out of prosecutions for neglect of the conscience clause—for such neglect really underlies all prosecutions since the new Act came into force—have done much to make it easy for the Leicester guardians to obscure the issue and to pose as champions of local government rather than of anti-vaccination.

Three weeks ago we published a letter from a layman of Leicester complaining of the intolerance of anti-vaccinationists and of their objection to freedom of conscience on the part of those who differ from them. This view receives some confirmation from a letter written by a London vice-president of the League and published in a Leicester newspaper. It appears that Mr. HAZELL, one of the local

Members of Parliament, while urging individual liberty in the matter is himself a believer in vaccination and that his speech in Parliament in connexion with the action of the guardians has not given satisfaction to the vice-president in question. That gentleman in his ire declares to the people of Leicester that he "cannot imagine what justification Mr. HAZELL can have for casting a doubt upon the wisdom of his own constituents in this matter," or for "saying amid Ministerial cheers that 'he was not there to defend the guardians.'" It is satisfactory that the vice-president was not allowed to go unanswered, "A Pro-vaccinist" in the same newspaper using the letter as an illustration of "the intolerance and tyranny which is at the bottom of the anti-vaccination movement," and pointing out that the difficulty in Leicester had arisen because the anti-vaccinationists had "inveigled their fellow citizens into refusing, as a matter of principle, to avail themselves of the exemption which the law provides." The "Pro-vaccinist" concludes with a statement (in which most people will concur) that when the vice-president "talks about the 'cruel and unjust law' which oppresses Leicester he evidently relies upon the profound ignorance" of the Leicester people as to well-known facts. When a writer takes the trouble to make himself acquainted with his subject, as "A Pro-vaccinist" has done, he need have little hesitation in entering on newspaper correspondence with the most practised controversialists of the Anti-Vaccination League.

Truth in its issue of Sept. 7th has some further remarks on the question of "Doctoring by Contract" with special reference to our comments on that journal's first article in which we found much that was interesting and forcible, but too much countenance of the obnoxious system of canvassing. We must repeat the expression of our satisfaction at seeing this whole subject discussed in a lay journal with a clear perception of all the important bearings on the profession and on the industrial classes alike. The system of canvassing is a mere detail of the question. If some plan could be devised for abolishing this system and for securing proper respect and proper payment for the medical man, or rather for the medical profession, the members of medical aid associations would be much better provided for in their sickness and the members of the medical profession would be relieved of an unpleasant feeling that they have been ungenerously treated by such associations.

It should never be forgotten that the safety and welfare of the industrial classes, as of all others in sickness, depends not on a single medical man but on the profession as a whole working harmoniously. They never know when they may need the profession in its highest sense—not a mere elected member of it, elected perhaps for his youthfulness or his cheapness or his lack of independence and self-respect—but one or other of its "selected" men, eminent for his standing, his experience, and his skill, and raised to a position of comparative independence in the community. The interest of the working classes consists in maintaining the goodwill of the profession as a whole, not in estranging the whole of it in any given place for the sake of a cheap and "sweating" arrangement with a stranger who has to be pushed and advertised and canvassed for among the patients of other medical men. Our contemporary, of course, sees the offensiveness of canvassing.

"Let me say at once," the writer in *Truth* remarks, "that I fully appreciate and—up to a point—sympathise with the feeling of medical men in regard to canvassing." ..... "Although a doctor is forbidden from personally canvassing for patients he thinks himself justified, as things are, in profiting by the canvassing undertaken (practically on his behalf) by an association which employs him. In a small country town or district there are two doctors, A and B, neither of whom would ever dream of trying to entice away patients from the other. Dr. A becomes medical officer of a canvassing association and forthwith Dr. B finds that all his humbler patients are disappearing in consequence of the inducements held out to them by canvassers to become patients of Dr. A. In a profession which discountenances canvassing this is an anomalous state of things."

This is an excellent account of the evil, showing its pernicious working and its unfairness to other practitioners whose innate sense of dignity and respect for the traditions of the profession prevent them from adopting similar methods. Our contemporary after admitting the evil presses us to say how medical aid associations can be conducted without canvassing. No doubt this is a difficulty and we admit that the profession would not regret to see all such crowded and wholesale systems of medical attendance break down on this or any other ground. Moreover, our contemporary is quite entitled by way of further retort to remind us that "we must not look at such matters entirely from the doctor's point of view." We admit the wisdom of the advice. Half the mischief of all these arrangements is due to the fact that one side does not take into consideration the case of the other. But we perceive on all sides a growing disposition to adopt a sensible and a reasonable view. Our contemporary, feeling the difficulty of "keeping such concerns alive without canvassing," suggests that if the General Medical Council laid down the rule that a medical man would be guilty of infamous conduct if he acted for an association out of which somebody else makes a profit, or which does not pay the medical officer all net receipts or the subscriptions to which fall below a certain fixed scale, every medical man could form an association of his own, and, as he would have no working expenses, if he were fairly competent he would have no reason to complain. Surely this would imply a double set of canvassers—that of the association and of the private practitioner—competing with each other, not a very happy prospect.

In further answer to this we may say that the General Medical Council has never yet seen its way to dictate scales of fees for associations or for individuals. It has, however, gone far in this direction by advising and by assisting the promotion of a conciliation board representative of friendly societies and of the medical profession by means of which there is some reason to believe that such questions might be adjusted. It has clearly indicated that by throwing excessive work on medical men the very end and use

of medical attendance may be frustrated and medical service brought into disrespect. As to the possibility of dispensing with canvassers the friendly societies assert that in maintaining their Medical Aid Associations no canvassers are employed, which seems to show that the system is not indispensable where the class of persons benefited is properly limited to the industrial section of the community. In conclusion, our contemporary speaks approvingly of the National Deposit Friendly Society, in which the essential feature is that the subscriber can choose his own medical adviser, and the medical adviser is paid "for work done" on a scale which is much more liberal than that of the existing medical aid associations and in proportion to the means of the subscriber. The fundamental points on which the solution of these questions will turn are: a greater choice of medical men to the patient, more fairness to the whole body of practitioners, a higher rate of payment for medical service, and the abandonment of all idea of using the medical officers as means of making money for associations.

As our readers will recollect we announced some time ago that a committee had been appointed by the Lords Commissioners of the Admiralty to consider and report on various matters connected with the naval medical service. The object which the committee had in view was to bring the service abreast with the progress of scientific medicine and hygiene and the medical and surgical requirements of the present day by increasing the opportunities for the practical study of their profession on the part of medical officers generally as well as by equipping them with those modern instruments and appliances necessary for the efficient performance of their professional duties. The committee consisted of Admiral MOORE, C.B., C.M.G., the Junior Naval Lord; Mr. AUSTEN CHAMBERLAIN, M.P., the Civil Lord; and Sir HENRY F. NORBURY, K.C.B., the present Medical Director-General, with Staff-Surgeon A. G. P. GIPPS, R.N., as secretary. Their report has now been published and it appears to us to be an able, lucid, and business-like statement of the case. It is eminently moderate in its tone and recommendations; indeed, considering the very important interests involved the committee's proposals and demands are so reasonable that they may be said to constitute an irreducible minimum.

There is no need to enter into any description of the qualifications, requirements, and course of study officially prescribed for medical candidates for the medical service of the Royal Navy. Anyone can ascertain them by reference to the Students' Number of THE LANCET. The question tha concerns us, assuming these to have been adequate at the time they were framed, is whether they now require to be increased and modified to bring them into harmony with existing needs and still more whether medical officers of the navy enjoy sufficient means for keeping themselves abreast of modern knowledge and scientific progress. There is, as everyone knows, no finality about any branch of knowledge and least of all is this the case where our profession is concerned. In almost every direction the progress has been immense. Lord LISTER'S discoveries have revolutionised surgical practice; bacteriological science has thrown a new light upon the causes of disease and opened out new methods of investigation; the microscopical study of blood parasites in relation to tropical fevers and disease; the advances made in hygiene and sanitary science, which have been placed upon a new and more scientific basis owing to more recent and more exact knowledge of the various agencies at work as disease-causes; and the vast changes that have taken place in everything concerning modern warfare,—these have acted and reacted on one another and have profoundly altered our views of such matters. A rigid scrutiny and revision of regulations is absolutely necessary from time to time and probably never more so than at present. Be the cost what it may this country can least of all afford to occupy a secondary rank in international competition and progress and in the application of scientific discoveries to the changing necessities of life.

The committee very wisely, as we think, deemed it expedient to begin their inquiry by obtaining the opinions of naval medical officers themselves upon some of the points referred to the committee. There was a remarkable unanimity of opinion in the replied in regard to the inadequacy of the present course of instruction to surgeons on entry at Haslar. All the officers consulted were very naturally of opinion that the Haslar course should include special instruction in those diseases which occur on foreign stations in which HER MAJESTY'S ships serve and the Colonial Office pressed upon the attention of the Admiralty Committee the new School of Tropical Medicine which is being established in connexion with the Royal Albert Dock Hospital. The committee, after considering the question, however, arrived at the conclusion that the course at this hospital, although it would form a useful part of post-graduate instruction, could not be made available for naval purposes. It was, in the opinion of the committee, absolutely necessary that the Haslar course should include special instruction in the diseases peculiar to foreign stations. We think that the committee are quite right in having taken this view. Haslar is the proper as well as more convenient place, and if seamen suffering from such diseases are concentrated there, as proposed, instead of being distributed amongst all the home hospitals, the amount of clinical material at Haslar should exceed that likely to be present at the Royal Albert Dock Hospital.

At the end of their excellent and useful report, in which all the points submitted for the consideration of the committee are discussed more or less in detail, a summary of the committee's recommendations is appended. To this we may therefore usefully turn in any further remarks that we may have to make; but the whole report well deserves perusal. It is recommended that special wards should be established at Haslar for the reception, accommodation, and treatment of cases of disease coming from foreign stations and that such diseases should form the subject of clinical lectures. The instruction now given in meteorology is to be greatly reduced and that in food analysis to be strictly confined to the requirements of the service afloat. A large addition (given in detail) is to be made to the subjects

now taught at Haslar with the view of bringing up the course of instruction there to the requirements of modern medical knowledge and the latest scientific methods of research, together with instruction in various practical subjects pertinent to a naval surgeon's training; it is recommended that the course should last for four months, free from interruption. An additional medical officer of the rank of fleet- or staff-surgeon, it is suggested, should be appointed on the instructing staff for charge of the special wards for diseases of foreign climes who is to lecture on the diseases treated therein, and a special allowance is to be given to him for the purpose. The position of surgeons in the naval list should, it is proposed, be determined by the sum of the marks they obtain in London on entry and those on conclusion of the Haslar course; also that prizes should be established and awarded at each session at Haslar. Surgical instruments are recommended to be supplied at the public cost. The very limited number of medical officers privileged to attend a post-graduate course is to be increased and extended and it is suggested that the course at the Royal Albert Dock Hospital might be utilised in this respect. Finally, it is suggested that the Health Report of the Navy might be remodelled with advantage—a matter to which we have frequently referred.

In our opinion the Director-General of the Royal Navy Medical Service is entitled to a great deal of credit for the part that he has played in the interest of his department and of the naval service generally. There are possibly many points on which we might enlarge and comment, but taken as a whole the report is altogether in the right direction and, as we have already said, so reasonable and moderate in its demands that the committee's recommendations must be adopted if the efficiency of the naval medical service and the proper care and medical treatment of the officers and seamen of the Royal Navy are to be maintained.

"WHAT is genius but organisation?" asks Mr. G. H. LEWES; and the question might with advantage be pressed into other spheres than that which the author of the "Biographical History of Philosophy" was immediately concerned. Not only the mental constitution, not only its equipment hereditary or acquired, but its health or its energising force at successive periods of its development should be made the theme of inquiry if anything like a rational or scientific account of human thought in civic action or in creative effort is to be adequately given. ARISTOTLE, with the acumen that belonged to him as a consummate nature-student and thinker, had a clear perception of this truth and dwells with characteristic penetration on the presence of melancholia (not necessarily in its restricted pathological sense) in leaders of men, whether in the political, the artistic, the active, or the creative sphere. Other elements there are in the physical or mental constitution exerting an equally determinant or modifying influence on the thinker in his study, or the man of affairs in his cabinet, or the military commander in his tent—elements beyond the reach of the mere historian's appreciation and appealing more or less directly to the scholar of medical culture or of clinical experience. Yet how seldom are these elements considered in appraising the work or in estimating the character of the more prominent figures in history? MACAULAY in his Diary, commenting on the "historical ideal," cannot find its realisation in even the best of his precursors—not even in THUCYDIDES, still less in TACITUS or CLARENDON or GIBBON, certainly not in himself. There is in all of them a "something" missed, a desideratum felt, by the more critical reader, especially when the forces, moral and physical, embodied in the personalities which they depict have to be accounted for. Take, for instance, that most interesting actor in the Peloponnesian War, the able, cultured, refined, humane, patriotic NIKIAS, on whom a cruel destiny imposed the conduct of that Sicilian expedition which ruined Athens and—disastrously for Hellenic civilisation—shifted the centre of political gravity to Lacedæmon. In contemplating his policy and tactics, sometimes brilliantly sagacious, sometimes inexplicably purblind, sometimes nobly energetic, sometimes impotently supine, the ordinary reader is apt to share the bewilderment of GROTE till his attention is called to the physical condition of the Athenian commander and he is adequately enlightened as to the uræmic poisoning, with its intermittent blunting of the faculties and paresis of the will, of which the unfortunate man was the victim. PLUTARCH with his characteristic regard for seemingly trivial but really significant detail dwells emphatically on the renal affection from which NIKIAS suffered and puts us in the same position for judging of his intercurrent inertia and obfuscation as that afforded us by Sir WILLIAM GULL'S comments on a parallel affection in NAPOLEON III.—comments enabling us to understand the Emperor's collapse during the seven weeks of the Franco-German War. Other examples might easily be adduced of the light thrown by pathological evidence on human policy and action—of the value, in other words, of the "medical factor in history." What reader of PLUTARCH fails to understand LYSANDER'S later career or AGESILAUS'S chequered character when that masterly portrait painter draws his attention to the melancholia of the former and the congenital deformity of the latter? If, to revert to the thesis of Mr. G. H. LEWES, "genius is only organisation," are not the issues of that genius determined, modified, perverted, or frustrated by the lesions physical and mental to which its organic *alter ego* or second self is liable? The inquiry suggested is an eminently reasonable one and ought to bear fruit in the historical field from which the medical coadjutor has too long been excluded. Certainly the "factor" which his culture and experience represent cannot fail to throw light on many a course of action and on many a world-famous character which the purely political investigator has had too often occasion to confess himself unable to understand.

IRISH CONJOINT EXAMINATIONS.—We have received a Medical Student's Guide issued by the Royal Colleges of Physicians and Surgeons, Ireland, giving full particulars of the regulations for the licences of these bodies. The preliminary examination for the commencement of medical study will take place on Sept. 27th and 28th.

Annotations.

"Ne quid nimis."

THE DIFFICULTIES OF CORONERS.

SOME of the difficulties as regards medical and other evidence with which coroners have to contend were well exemplified in an inquest recently held at White Lee, Batley. The coroner was Major Taylor. The inquiry was held on the body of a child, 14 months old, who died presumably from "consumption." It was asserted that the medical officer of health of the borough, Mr. Stuart, had given a certificate of the death although he had not seen the child for a month previous to the death. The registrar of births and deaths was said to have duly registered the death. The circumstances were brought to the notice of the police and the coroner decided to hold an inquest. The mother of the child gave evidence and was severely examined by the coroner. She stated that the child was perfectly well up to last Easter, when she commenced to vomit. The witness called in Mr. Stuart; his assistant saw her and ordered treatment. About a month before the patient died Mr. Stuart told the witness that he could do nothing more and he did not attend again. She went to ask him to come again on Monday, Sept. 4th, but he did not attend, and death ensuing two days subsequently he gave a certificate of death. On being further questioned the witness stated that two other medical men had seen the child during the month, but there was no evidence as to treatment. The witness further stated that the child's life was insured. Strangely enough, Mr. Stuart was not called as a witness. In spite of a strong speech from the coroner, who alluded to the duties of medical men in seeing patients regularly and to the fact that a certificate of death had been given although the medical man had not seen the child for a month, the jury returned a verdict of "Death from natural causes." On this the coroner waxed indignant and asked the jury, "Do you consider, gentlemen, there is no neglect on the part of anybody?" To which question, after a little hesitation, came the extraordinary answer, "that has not been mentioned," nor could the coroner obtain any more definite information. That the whole inquiry was unsatisfactory nobody can deny. That Mr. Stuart was not called as a witness is greatly to be regretted. The fact that the child's life was insured appeared to give rise to suspicion, but the jury apparently did not think so, and it is a matter for regret that as an inquiry was held it was not more complete. It is a significant fact in favour of the mother that although an inspector of the Society for the Prevention of Cruelty to Children had brought a medical man to see the child during life, yet the society was not represented at the inquest. The coroner's opinion is undoubted, for his final words were: "Well, if you like to put it so [i.e., the verdict], all right, but all I can say is that you haven't listened to the evidence. I haven't had a worse case for a long time. In your opinion apparently there was no need to have an inquest at all." From the evidence that was taken we find it very difficult to come to a conclusion.

AS OUR FATHERS HAVE TOLD US.

THE eighteenth century was, if not so full of wonders as the nineteenth, at all events remarkable in many ways. Society was then a term with a very definite meaning and for a picture of country society we may recommend a perusal of a book[1] containing the letters and diaries of one who must have been a very clever and observant woman. Her diaries show marked qualities of observation—possibly a hereditary gift in that she was the daughter of John Girle, M.D., who, according to his epitaph, "having early in life acquired an ample fortune the just reward of superior eminence and unremitting diligence in his profession indulged himself in the pleasing prospect of dedicating the remainder of his days to the noblest purpose of humanity, the relief of the distresses and infirmities of his indigent fellow creatures." John Girle's death, however, cut short his pious aspirations. Caroline Girle married Philip Lybbe Powys of Hardwick House, Oxfordshire, and in a letter to a friend she says that all the tenants say there never was so beautiful a boy as the young squire; "but," she goes on, "I think (fortunately) the small-pox has given him now a good rough, manly face." She gives a wonderful recipe for lavender drops "which are far superior to any one buys." We may add that they contained 32 ingredients and took 21 weeks to make. In 1779 the following note occurs in her diary: "Caroline Isabella [her daughter] inoculated Oct. 13th." Like everyone else with any pretensions to being fashionable Mrs. Powys went to Bath, where her husband received much benefit from the waters, and from there to Clifton, of which she says: "The dismal brown pump-room at the hot wells always strikes one with horror. I'm certain it's being so dull a one must strike the miserable concourse of invalids always assembled in it with a melancholy not to be erased." The following extract will interest our readers. We may premise that Mrs. Powys's son who was in the army was in the habit of visiting his parents at Hardwick and one day they received a letter saying that he would be down the following day as "something had flown in his eye ..... and it gave him great uneasiness. He had shown it to the surgeon of his regiment who said he would bleed him in the morn." On the way down to Hardwick the post-chaise was upset and though young Powys was not injured yet the pain in his eye was "vastly increased." He was then treated by the local practitioner and an eminent surgeon, Mr. Davenport. The patient eventually got well despite the treatment which, according to his mother, was as follows: "He has not since the accident tasted a bit of meat or a drop of wine, had a perpetual blister ever since, and blooded every three or four days for many weeks." Bleeding, cupping, and leeching occur over and over again in Mrs. Powys's memoirs and even her mother, aged 86 years, was subjected to these methods. We have, of course, only selected these more purely medical points to comment on; but as a picture of old English life the book is well worth reading.

[1] Passages from the Diaries of Mrs. Lybbe Powys, 1756-1808. London: Longmans and Co.

THE CLINICAL VARIETIES OF ALCOHOLISM.

DR. HANS EVENSEN of the Asylum at Ganstad, Norway, has published an elaborate paper on the Clinical Forms of Chronic Alcoholism met with in Norway.[1] In studying the figures furnished by the official statistics of the lunatic asylums of Norway Dr. Evensen finds that in Norway, a country where the consumption of alcohol is very small and not exceeding 1¼ litres of alcohol per head of population per annum, alcoholic excess is relatively infrequent as a factor in the causation of mental disease in comparison with other causes. The following are the figures showing the causation of insanity for ten years (1886–1895 inclusive), the total number of patients being 5707: Hereditary predisposition to insanity accounts for from 32 to 48 per cent. of all cases during the 10 years mentioned and the proportions are about equal in both cases; psychical causes are assigned as the factors in from 19 to 29 per cent. of all cases; bodily illnesses are

[1] Abstract from the Norsk Magazin for Laegevidenskaben, by Dr. Paul Heiberg of Copenhagen, in Revue Neurologique, June 15th, 1899.

given as the cause in from 14½ to 20 per cent. of the cases; and alcoholic excess is responsible for from 5½ to 8 per cent. of all cases, but if male cases alone are considered it makes the ratio of alcoholic cases amount to a higher figure—viz., 10 to 14½ per cent. Thus one-eighth of all male admissions to the lunatic asylum are attributed to alcoholic excess. Dr. Evensen points out the mental inferiority of the habitual drunkard, especially as regards morals and self-control. He believes that alcoholic craving may manifest itself without a hereditary predisposition thereto and without stigmata of degeneracy being present at the same time. In his collection of records he finds alcoholic insanity without heredity in 530 males—i.e., in 22 per cent., and alcoholism with heredity in 72 cases. Dipsomania is attributed to periodic states of mental depression. After referring briefly to the epileptic variety of alcoholism, which does not necessarily imply insanity, and to delirium tremens, he examines and classifies cases of alcoholic insanity in the stricter sense. He established six classes of these: (1) the extreme maniacal form; (2) the expansive form; (3) the confusional form; (4) the systematic delusional form; (5) the demented form; and (6) the pseudo-general paralytic form. Dr. Evensen concludes by pointing at the great importance of the problem of alcoholism from a medico-legal point and in referring to its treatment he urges the necessity of providing special institutions or retreats for the treatment of alcoholic subjects.

THE PRESIDENTIAL ADDRESS AT THE AMERICAN NEUROLOGICAL ASSOCIATION.

AT the twenty-fifth annual meeting of this Association held at Atlantic City, New Jersey, on June 14th last, Dr. James Hendrie Lloyd delivered the Presidential Address and referred to the future tasks and work of the Association. In the field of neurology in America it was essential, he said, at the present day that there should exist an association such as the above to act as an exponent of one of the most important specialties of medicine. In the United States the tendency was at one time rather towards provincialism; they had, however, outgrown that stage and were now realising that greater things were to be accomplished. A truly national association was needed for neurological science—not national in the petty and narrow sense that it represented every city or state, but national in the sense that it included every neurologist in the country of approved attainments. Most of the genuine original work in neurology done in the United States during the past 25 years emanated from those who were members of the Association and no national association of specialists in America could by this standard claim to be more truly representative. Neurology was in a special way a most difficult and involved field of practice, and the man who reaped genuine success in it was willing and anxious to be enrolled in the Neurological Association, for he felt that in such a place alone could he meet with both the understanding and the criticism which were at once the reward and the stimulant of his own work. "The man who works in nervous diseases," added Dr. Lloyd, "and never seeks to gain membership in this Association must either have some secret misgivings about his own neurology or entertain an indifference towards the very specialty which he professes. Here alone is the arena in which he meets his true *confrères*; here alone can he hope for the spirit which makes a symposium of his nocturnal vigils in neurology and creates an atmosphere which is productive of his best thoughts." It had hitherto been too much the custom to look abroad for some of their technique and methods, too frequently the case to seek for inspiration and knowledge elsewhere. But a great school of neurological medicine was growing up at home which ought to bear its own fruit in the immediate future. In older times neurology was scarcely recognised as a branch of medical science. The old-fashioned professor and practitioner of physic was from force of circumstances not proficient in neurology. He was (with few exceptions) unfamiliar with its clinical details, its complex anatomy and physiology, and its difficult technique. All this, however, was passing away and neurology was assuming its own and proper place in the present-day medical curriculum. The student of neurology had to gather his knowledge, not only from the lecture-room, but from the bedside and from the laboratory. The science of neurology presented several phases which were worthy of note. In the first place it had grown somewhat lukewarm towards the revelations of bacteriology as affecting problems arising in its own domain. From a therapeutic standpoint the returns had been coming in rather slowly from the bacteriologists and they were not as yet in a position to offer a reliable serum-treatment for many nervous disorders. In pathology, said the speaker, there was no occasion for disappointment, for they were standing at the threshold of a new and wide field in neuro-cytology in which much promise was beginning to unfold itself. But in medicine, as in other sciences, they moved in "cycles and epicycles," and, like some primitive tribes, they always worshipped the new moon. They were just now engaged in the cult of Nissl—they were at the high tide, as it were, of methylene-blue. At another time the neuron-theory had promised much, but more remained to be fulfilled. Pathology was the science of disease and they accomplished their true aims if, like the archæologists, they could point out unerringly what had been the normal structure from a study of its ruins and remains and could do something to reconstruct those ruins. In the domain of the nervous system this was a fascinating study, for in the nervous system were manifested the highest and noblest functions of organic matter. Originality and independence in work were of the highest importance. The spirit of research should be cherished and encouraged. They could not remain mere copyists or disciples of foreign masters. Finally, it should not be forgotten that the great lights in medicine had been the great clinical observers. Clinical and therapeutical aims should be foremost in their ideals. Without constantly keeping expert in reading the signs of disease at the bedside and ministering to the wants of suffering their medicine would become a dry and barren thing.

THE COMPOUNDING OF PRESCRIPTIONS.

A CASE of great importance to the medical profession and druggists was heard recently at the West London Police-court before Mr. Rose. Certain druggists were prosecuted for "selling a compounded drug not comprised of ingredients in accordance with the demand of the purchaser." Mr. Blanco White, who attended on behalf of the Fulham Vestry to support the summonses, explained that the proceedings were taken under the 7th section of the Food and Drugs Act. In order to test the accuracy of preparations made up by druggists, Mr. Jackson, the medical officer of health for Fulham, wrote out prescriptions and had them made up by the defendants. In the first case heard the sample of medicine contained, according to the analysis of the vestry's analyst, Mr. Cecil H. Cribb, 258 grains of iodide of potassium in six ounces of mixture, whereas the prescription required 240 grains, showing an excess of 18 grains, so that in each dose there would be an excess of three-quarters of a grain of iodide of potassium. In the interests of the defendant Professor John Attfield, F.R.S., was called and gave the result of his analysis of a portion of the same mixture which had been submitted to him. He could only find an excess of two grains above the 240 ordered by the prescription. Mr. Blanco White asked that

the third sample might be submitted to the Government Laboratory for a final analysis. Mr. Waddy, who appeared for the defendant, urged the magistrate to exercise his discretion in this matter by refusing the application. Mr. Rose acceded to this and in dismissing the summons on the facts observed that he had the greatest doubt whether the Food and Drugs Act was meant to be applied to a case of this nature. The Act, he thought, was intended to deal with frauds and had no relation to a trifling excess of an ingredient in a bottle of medicine. Moreover, it could not be supposed that the Act was intended to enforce the absolute exactness of a prescription. We cannot at all agree with this finding and we consider the decision a most dangerous one. The 7th section of the Food and Drugs Act, 1875 (which is still in force until next year), runs thus: "No person shall sell any compound article of food or compounded drug which is not composed of ingredients in accordance with the demand of the purchaser under a penalty not exceeding £20." It is of the utmost importance to the general public that prescriptions should be made up according to the medical practitioner's orders, and some law must exist to protect persons from the action of careless druggists. We fully believe that, as a general rule, the greatest care is exercised by druggists in compounding prescriptions, but exceptions may occur. In the case described above the error would certainly not have mattered, but for the magistrate to talk about "trifling errors" shows a great want of knowledge of drugs. With certain preparations a "trifling error" might have the most serious results. To utter a decided opinion with all the force it must have as coming from the Bench in a test case of this kind is to assume a great responsibility. It is not the nature of the drug in this particular instance that is in question, but the whole meaning of the Act in regard to the dispensing of prescriptions. The Act distinctly states that the article must be composed of ingredients in accordance with the demand of the purchaser, and if such be not the case then a breach of the law has taken place, and a penalty should be inflicted. The summons against another of the defendants was withdrawn, whilst those against two others were postponed. We should like them to be proceeded with, so that the wording of the Act could be further insisted on and its true significance settled. If the learned magistrate's decision be correct the sooner a more definite section be inserted in the Act the better, for we observe that the Sale of Food and Drugs Act, 1875 to 1899, which comes into operation Jan. 1st, 1900, contains no reference to the section quoted above.

TOKELAU.

ACCORDING to Dr. Tribondeau of the French navy[1] the remarkable skin disease known locally in the Southern Pacific Ocean as "tokelau" has been the subject of numerous publications, lay as well as medical, for upwards of two centuries, but it nevertheless still stands in need of an adequate description. Observers hitherto have been mere birds of passage, for the most part imperfectly equipped, lacking both time and opportunity to perfect their study of the affection and consequently unacquainted with each others' writings. Hence, no doubt, it is that the disease has become endowed with an exceptionally voluminous nomenclature, as voluminous probably as can be found throughout the whole range of pathology, but unfortunately among these multitudinous designations none are entirely appropriate. Manson and Turner have respectively named the disease "tinea imbricata" and "herpes desquamans," but Dr. Tribondeau is unable to accept either of these titles. The word "tinea," he maintains, is always used in connexion with the hairy regions of the body, which are precisely those least and last invaded by the tokelau parasite; and so far from being "imbricated" the concentric rosettes which the latter causes are invariably discrete, never overlapping each other at their edges. The disease, he thinks, has nothing at all in common with herpes. He can understand the term "herpes circinata" being thought applicable to a tricophytic eruption having a smooth base, but in tokelau there are no smooth interspaces, the sufferer's skin being entirely covered until, in a severe case, he resembles a huge fish. As for the epithet "desquamans," continues Dr. Tribondeau, why exfoliation is such a common phenomenon in skin affections that really in the present instance something more definite is required. Tokelau is by no means a perfect name; still, it has its merits, and having adopted it definitively himself he trusts that his example will be generally followed, so that the confusion inseparable from a superabundance of synonyms may be avoided. Dr. Tribondeau spent two years in and about the Society Islands while employed as medical officer of the despatch boat *Aube* and thus had ample opportunities for studying the disease. The clinical notes which he has collected permit him to give a description of tokelau "more complete than any which have preceded"; and, moreover, in the course of his microscopical researches into the intimate structure of the "mushroom" causing the malady he has discovered "forms and organs of reproduction heretofore unknown." The tokelau organism, of which two admirable plates[2] are given, is, in Dr. Tribondeau's opinion, wholly distinct from the trichophytons with which it until now has been confounded, and it ought in reality to be classified as an aspergillus. As no special designation so far exists for the tokelau parasite Dr. Tribondeau proposes to endow it with the name "lepidophyton" (λεπις—ιδος, fish-scale; φυτον, fungus), a suggestion to which there would seem to be no objection. He has dealt with his subject in five chapters which are entitled respectively History, Symptoms, Etiology, Diagnosis, and Treatment. He has something interesting to say in each, but we have space for one extract only. "In 1889 a native who formed one of a group of Tahitians sent to the Universal Exhibition of Paris, being covered with squamous scales wished to take advantage of his sojourn in France by getting rid of his tokelau. He entered a hospital where they began the essay of a whole series of remedies without producing any permanent impression on the tenacious parasite. At last an ointment of chrysophanic acid brought it to reason. Returned to Tahiti the patient gave the curative formula to an apothecary at Papeete. The ointment in every case acted like a charm, and if the disease still exists it is because the people affected are too lazy to submit to a complete destruction of the lepidophyton. It is, however, permissible to hope that in a few years tokelau will have become a disease of the past."

[1] Archives de Médecine Navale, July, 1899.

DANGEROUS TRADES.

THE final report of the Departmental Committee on Dangerous Trades has, as we mentioned in THE LANCET of Sept. 9th, p. 733, been issued as a Blue-book. The report deals with "millstone building," the manufacture of emery wheels, the preparation of basic slag, the manufacture of the oddly-named "silicate of cotton" which is in reality fused slag blown into fine threads, the extraction of salt from brine, and the use of metallochrome powder. Sundry dyeing processes in which salts of lead are in use are considered as well as the process of dyeing with arseniate of soda. This last process, however, the committee do not think it necessary to label "dangerous." With regard to "label-licking," a process to

[2] One representing the newly discovered sporiferous organs

which Miss Anderson was the first to call attention in 1894, the tongue is now generally replaced by an artificial damper. We hope to return to the subject in an early number.

A WARNING.

WE are requested to bring the following facts before our readers. A woman giving the name of Mrs. M. K. Harvey is going about the country asking medical men and others who are not medical men for assistance. She gives as references the names of prominent members of the profession and in one instance at least as proof of her respectability gave out that she was just about to be married to a well-known physician—a statement which is absolutely false; moreover, the physician in question knows nothing of the woman. The description of the woman is as follows. She is short, about five feet in height, very broad and fat. She has muddy blue eyes with pin-point pupils. (She takes morphia.) She has prominent teeth, some false, has short features and dark hair turning grey at the temples, cut as a fringe in front. Her manners and speech are ladylike.

THE NEW HOSPITAL AT BISHOP AUCKLAND.

ON Sept. 8th Lord Rosebery opened a new cottage hospital at Bishop Auckland. The hospital was originated by Lady Eden in commemoration of Her Majesty's Diamond Jubilee and has cost about £2000. Lord Rosebery, who spoke in his usual happy vein, referred to the fact that some people were anxious for the State to provide everything. But the State, as he pointed out, is after all only an aggregation of individuals whose independence and self-reliance went to make up all that is of value in the State. Strike at the independence of individuals and the State vanishes. "I welcome the fact," continued his lordship, "that the miners of this district are going to show an honourable independence and an honourable self-reliance by rating themselves to maintain this hospital." We can join in cordially congratulating the Durham miners upon their decision and all the more so in that we have at times felt it to be our duty to say hard things as to the way in which they looked on the payment of their medical officers. But in the matter of their hospital they have done nobly and for their action they deserve commendation.

THE TREATMENT OF ANEURYSM BY THE SUBCUTANEOUS INJECTION OF GELATIN.

THE treatment of aneurysm by the subcutaneous injection of gelatin recently introduced by M. Lancereaux has yielded remarkable results. In THE LANCET of Oct. 22nd, 1898, p. 1092, the procedure was described; 250 cubic centimetres of a solution of 2 grammes of gelatin in 100 grammes of saline solution are injected under the skin of the thigh. The injection is renewed at varying intervals from every two to 15 days. As a rule, 10, 15, or 20 injections produce complete cure. They act by increasing the coagulability of the blood. In the *Journal de Médecine Interne* of July 1st, 1899, Professor Stoïcesco of Bucharest has reported six cases of aneurysm of the aorta and innominate artery treated by this method. The results are striking and fully confirm M. Lancereaux's claims. A woman, aged 36 years, had aneurysm of the ascending aorta. There was considerable dyspnœa and the patient could not lie on her back. The face was œdematous and cyanosed and the veins of the neck were dilated. A pulsatile hemispherical tumour occupied the right, first, and second intercostal spaces. On March 3rd 83 cubic centimetres of a 1 per cent. solution of gelatin were injected subcutaneously; on the 6th 105 cubic centimetres; on the 9th 120 cubic centimetres; on the 16th 120 cubic centimetres; and on the 25th 120 cubic centimetres. The tumour became harder and the expansile movements less pronounced, and the dyspnœa and difficulty of the circulation were much diminished. The patient left hospital and was lost sight of. In another case a woman, aged 55 years, had aneurysm of the innominate artery. In the right subclavicular region was a pulsatile tumour of the size of an orange. On July 15th 80 cubic centimetres of a 1 per cent. solution of gelatin were injected subcutaneously. On the 17th the tumour appeared smaller and firmer and the pulsations were less superficial. On the 25th 100 cubic centimetres were injected. On the 27th the tumour had diminished to the size of a pigeon's egg. On April 5th 100 cubic centimetres of a 2 per cent. solution were injected which was followed by intense pain at the seat of injection. The tumour progressively decreased to the size of a filbert and the pulsations were no longer superficial. On August 8th the patient was discharged completely recovered. On March 8th, 1899, she was seen again; the good result was maintained and the tumour was of the same volume as at the time of discharge. In a case of aneurysm of the ascending part of the arch of the aorta compressing the vena cava and also causing intense dyspnœa the patient died two hours after a single injection. The arch of the aorta was found to be dilated in its whole extent and presented a large sac in its right half which contained some organised clots and one recent clot. In the left carotid artery about 6 centimetres above its orifice was an adherent clot 1½ centimetre in length. The injection was found to have been completely absorbed. In the other cases the results were very satisfactory and in one (aneurysm of the innominate artery) the patient was long enough under observation to enable the permanence of the result to be proved.

MEDICAL ORGANISATION.

As will be seen by a letter published in another column the Manchester Medical Guild is endeavouring to organise a conference of delegates from all societies or associations of general practitioners in the country. The objects of the conference may be shortly stated as follows:—

1. To promote greater cohesion and better organisation amongst the general practitioners of the country and generally to develope an *esprit de corps*. 2. To afford general practitioners from all parts of the country an opportunity of meeting together and discussing all matters affecting their welfare and in this way of bringing their views to a focus. 3. By giving publicity to their views on questions affecting them to influence public opinion in their favour and thus to uphold and improve the status of the profession. 4. To provide some machinery by which the advantages of an annual conference may be secured to the profession.

It may be seen from the above that it is proposed that the conference should devote itself purely to medico-ethical and medico-political questions and leave scientific matters entirely alone. There are many questions—amongst which may be enumerated the following, viz., contract practice, the constitution of the General Medical Council and its attitude towards the general practitioner, the proposed new Medical Act, the proposed legislation for midwives, hospital abuse, district nursing, and the proposed conciliation board—about which it is very desirable that the voice of the profession should make itself heard in a manner at once unmistakeable and unanimous, and such a result may very well be obtained if the proposed conference should be successful and representative. It may be said that the profession is resorting to the methods of those who devote themselves to trade. This may be so, but it must be remembered that the majority of medical men depend upon their profession for their daily bread and there is no profession which is so exposed to the competition of quacks and heretics. Nay more, the medical profession's whole *raison d'être* is to get rid of, so far as may be, the very set of conditions which make

it necessary. If we remember that if any work not neither shall he eat, let us also remember that the labourer is worthy of his hire.

ACUTE POISONING BY ALCOHOL IN A CHILD.

As cases of acute poisoning by alcohol in children are very rare the following case recorded in the *New York Medical Journal* by Dr. M. A. Walker is worthy of note. A boy, aged six years, before breakfast, between 8.30 and 9.30 A.M., went, accompanied by his two brothers, aged eight and four years respectively, to a closet where whisky was kept. Each poured out and drank undiluted whisky from a glass capable of holding about 3¾ ounces. From the description of the eldest boy the patient probably drank about 3 ounces and the others about 2 ounces. The parents knew nothing of the escapade until about 9.30 when the boy while sitting at the breakfast table first dropped a plate and then fell from his chair. At 10.15 he fell asleep on the floor and his mother put him to bed thinking he would "sleep it off." There was no thought of serious consequences until 7.30 P.M. when the parents could not rouse him. At 7.45 he was comatose, the pupils were widely dilated and did not respond to light. The pulse was 145, small, weak, and compressible; the respirations were 40, easy and quiet. The axillary temperature was 103·2° F. In spite of treatment (which is not described) circulation and respiration slowly failed. At 10.30 severe clonic convulsions occurred which lasted about ten minutes, and from this time there were almost constantly recurring localised spasms of the muscles of the face and extremities, the left side being much more affected than the right. Cheyne-Stokes respiration began about 2.45 A.M. and death from cardiac failure occurred at 5 A.M. No means of stimulation seemed to have the slightest effect on the heart. The rectal temperature rose to 105·3° just before death. This case should be a warning—and, we fancy, a very necessary one—against leaving alcoholic drinks in places accessible to young children.

LEPROSY IN NEW CALEDONIA.

M. A. AUCHÉ, an apothecary of the second-class in the French Navy, who is the author of a series of articles on leprosy in New Caledonia which is now being published in the *Archives de Médecine Navale*, is responsible for the statement that the progress of the disease in that settlement is terrible (*foudroyante*). Fifty years ago, as well as can be ascertained by inquiries among missionaries, former officials, and the natives themselves, leprosy was unknown in the group of islands off the eastern coast of Australia which the French have converted into a penal establishment, but according to an estimate made a short time since out of a total native population of 39,000 there were between 4000 and 5000 lepers. "It is possible, however," adds M. Auché, "that the statisticians, whether medical or administrative, who indulged in these approximate calculations may have counted as leprosy certain badly-defined skin diseases (including the *kamété*) which are very widespread throughout the islands, but in which we have never been able to discover bacilli." The first case of leprosy in a European was reported in 1888 by the principal medical officer, Dr. Forné, who took advantage of the occasion to impress upon the executive authorities the urgent need of prophylactic measures in order to prevent the spread of the disease. Two years later his successor, Dr. Legrand, having met with four more cases in white subjects, repeated the warning; and in 1894 Dr. Grall, who at that time filled the chief medical post, published a memoir in which the cases of 37 European and half-caste lepers were detailed at length. Finally, when M. Auché was quitting the settlement in June, 1898, he had himself seen 92 white people who were either suffering from pronounced leprosy or who were under observation in hospital with symptoms rendering it highly probable that they soon would be. In 86 individuals who were bacteriologically examined the diagnosis was confirmed in 64 instances, but, as M. Auché points out, failure to isolate the bacillus is no proof that the disease is absent. Altogether during the decade 1888–98 there have been at least 132 cases of leprosy amongst a convict population numbering 10,500; whilst with regard to the free Europeans, although accurate statistics cannot be given, the proportion affected is most probably still greater. Even among the penal inhabitants a serious inquiry has never been undertaken, the administration being apparently indifferent on the subject (*peu friande*), but as it stands the picture needs no darkening. The fact that at the present moment 64 European lepers are living in New Caledonia should of itself be sufficiently alarming. Referring to the contagiousness of leprosy, which he looks upon as fully established, M. Auché draws attention to the peculiar virulence and extreme vitality of the bacilli which infest the pituitary mucous membrane. It is probable, he conjectures, that these play an important part in the dissemination of the disease.

THE RENNES VERDICT.

IT is not impertinent in the nations to feel a deep interest in the case of Dreyfus, and France will be well advised if she takes foreign criticism, even if somewhat plain-spoken, in good temper. The questions involved are not personal or racial. They are not merely national; they are international, universal, eternal—because moral. They go to the very roots of civilisation. They are, in fact, scientific and fundamental. There is no guarantee for progress or for society if justice is to be divided into two kinds—military and civil. With militarism in its present proportions the successful assertion of such a distinction would be badly ominous. We must, on scientific and moral grounds alike, denounce with all our might the iniquity of such a distinction. We cannot believe that the clear minds of France will be parties to the assertion of it; and thinking so, we deprecate haste and heat in devising retribution and punishment for France. They will come fast enough from within if she does not quickly shake herself into wakefulness and realise that she is tampering with the very elements and first principles of society. Even a more serious thing than the verdict of Rennes is the announcement that it creates in France no misgiving; that at the Cabinet Council the Premier and Minister of the Interior informs his colleagues that he had reports from the prefects of the various departments showing that the judgment of the Rennes court-martial had everywhere been received calmly. There is something suggestive of moral coma and insensibility in such a report. We cannot believe that the scientific and educated portion of France, apart from all distinctions of race and creed, will be overtaken with such a paralysis of perception. And it is in this belief that we would urge suspension of judgment for a short time on the part of such classes in other nations without any violent suspension of international amenities. The duty of France to choose between two courses is urgent and admits of no delay. Meantime, let us not too hopelessly identify all France with the five judges of Rennes. We have been led to make these remarks in view of the storm of indignation that has arisen because of the condemnation of Captain Dreyfus by the Court-martial and the threats—indeed more than threats—that have been made to boycott the Paris Exhibition of 1900. The case, too, is not without its medical bearings, for a member of the profession has written to the press to suggest that practitioners, as a protest, should not send their

patients to France this year. Moreover it must be remembered that the thirteenth International Congress of Medicine, an International Congress on Medical Ethics, and other meetings of interest to medical men are to be held in Paris next year. Since the above was written there has been a rumour that Dreyfus will be pardoned. If this rumour should prove to be accurate it will be a step in the right direction and one that was to be expected although it can afford but little consolation to a man to be "pardoned" for a crime of which he is innocent; still if "pardon" means release from prison and restoration to the arms of his family it may also mean the prevention of that total breakdown in health which is imminent and which in the case of men of less fortitude would inevitably have occurred long ago.

THE REGISTRAR-GENERAL AND DEATH CERTIFICATES.

WE have been asked about the alleged new instructions of the Registrar-General with reference to the certification of cause of death by medical men. According to a paragraph which has been going the round of the newspapers the Registrar-General has instructed his subordinates to refuse to register deaths on certificates given by medical men who have not seen the patient within three days previously to the fatal event. There is most urgent reason why the Registrar-General should use his authority in stiffening the conditions of registration of deaths in the direction of measures for securing evidence in all cases of proper medical attendance. The proportion of deaths uncertified, as distinguished from those which are the subject of inquests, is less than it was ten years ago. It was 2·06 per cent. in 1897, according to the Registrar-General's last report, as against 3·08 in 1888. But it is still far too large. There is reason to believe that both the Registrar-General and the General Medical Council are working together for an improvement in the law of registration, but we are informed on good authority that the paragraph to which we have alluded is entirely without foundation.

SKIN-GRAFTING WITH DRIED EPIDERMIS SCALES.

IN the Chicago *Railway Surgeon* of August 8th Dr. J. L. Wiggins of East St. Louis, Illinois, reports some results obtained by him after covering granulating surfaces with epidermic cells from the sole of the foot, a method of treatment described by Dr. J. T. Hodgen in the *St. Louis Medical and Surgical Journal* in 1871. Dr. Hodgen sprinkled the unprepared epidermic cells over the granulating surface and claimed to have obtained as good effects as those which followed the application of the ordinary skin grafts recommended by Reverdin. For the purpose of preliminary sterilisation Dr. Wiggins has the foot thoroughly scrubbed to remove as far as possible the outer layer of epidermis and then bathed in strong bichloride solution, after which it is covered with moist boric acid dressing and rubber tissue. At the expiration of 12 hours the dressing is removed and the surface thoroughly scraped with a dull knife. The cell mass thus obtained is transferred to a mortar placed in a water bath at a temperature of from 110° to 115° F. and the mass is stirred until thoroughly desiccated. The object of this procedure is twofold: first, to permit of trituration so as to separate the particles still further; and secondly, to divest them of all moisture so as to promote the adhesion of the cells to the moist surface of the ulcer. Dr. Wiggins has used two methods of applying the cells to the granulating surface, and has found each of them under varying conditions equally satisfactory where the surface was large. One was to cover the entire surface with ordinary rubber tissue perforated with holes at intervals of an eighth of an inch, the granulations projecting through the holes. The second method consists in marking off a space from one-fourth to one-half of an inch in width around the entire circumference and sowing this field with desiccated epithelial cells; over these are laid strips of rubber tissue extending half a line beyond the margin of implantation. The centre of the ulceration is then filled with strips of gauze and dressings are applied in the usual manner; this process is repeated until the entire surface is covered. When the surface does not exceed one and a half or two inches in extent the grafting may be accomplished without resorting to either of these methods. Dr. Wiggins says that in many instances in his own practice he has seen an ulcer measuring an inch by an inch and a half completely covered within 24 hours by a thin white film of organised tissue which in 10 days made it impossible to distinguish between the old and the new structure.

"SECRET COMMISSIONS AND THE MEDICAL PROFESSION."

SIR EDWARD FRY has returned in another letter to the *Times* to his favourite subject, "Secret Commissions and the Medical Profession," and we are glad to note a decided improvement in the tone of his criticisms. The letters of Dr. Saundby and of Dr. Thomson show conclusively that the existence of any system of such commissions on such a scale as to warrant Sir Edward Fry's previous letters is contrary to their experience and is unsupported by actual inquiries. Sir Edward Fry refers to our remark on the inadequate action of the General Medical Council in the matter of MacDonald, Sons, and Co. (Limited), and notices our agreement with him on the subject. But he makes no attempt to refute our main charge against him that he has written on the subject in a way not judicial, and which is more worthy of a novel-writer than of a judge. As the writer of a remarkable letter in the *Times* of Sept. 12th, signing himself "F.R.S.," says, "To me ..... the strictures of Sir Edward Fry's letters, in so far as they concerned my profession, seemed to derive their importance entirely from the eminence and uprightness of their author. To reply to them may have been a duty of courtesy, but was scarcely a duty of defence." "F.R.S.'s" experience extends over 32 years of consulting practice, in which he estimates that for 20 years he had 1700 communications a year with medical practitioners and a corresponding acquaintance with dispensing chemists, and he finds no support in this experience to Sir Edward Fry's charges. "The grave suggestion that the doctor may 'stand in' with an undertaker seems to me simply grotesque, though I cannot tell what corruption may possibly exist upon the skirts of the medical as of the legal profession." Sir Edward Fry would have been more justified in his critical exercises if he had practised them on some of the scandal of his own profession. But this is not our main point. We insist, with all respect, that he has given entertainment to charges against the medical profession on grossly inadequate evidence and that the only way in which he can atone for such a misuse of his great authority is to use it in procuring for the General Medical Council and the medical corporations the whole of the evidence on which the London Chamber of Commerce based their report.

THE DIRECT ACTION OF COCAINE ON THE SPINAL CORD.

IN the issue of the *Deutsche Zeitschrift für Chirurgie* for April, 1899, Dr. Bier reports the results of some experiments made by him to test the practicability of rendering considerable areas of the body—e.g., both lower limbs—anæsthetic by the action of cocaine injected directly into the spinal canal. The method employed was to introduce a minute quantity of the drug into the subdural space

of the cord by means of Quincke's lumbar puncture. By the employment in this way of from five to 10 milligrammes of cocaine hydrochlorate Dr. Bier succeeded in producing anæsthesia of the lower limbs and was able to perform painlessly such operations as resection of the knee-joint and ankle-joint, sequestrotomy of the tibia, resection of the ischium, treatment of a case of osteomyelitis of the femur, and resection in a case of complicated fracture of the femur. The only drawbacks resulting from this mode of administering the drug were severe headache, nausea, and vomiting, which some of the patients suffered from for several days after the operation. It was then decided that exact experiments should be made to determine more precisely the effects and for this purpose both Dr. Bier and his colleague Dr. Hildebrand submitted themselves to the action of cocaine injected into the spinal subdural space in the manner alluded to before. It was found that anæsthesia of the whole of the lower extremities supervened in from five to eight minutes after the injection and a dose of five milligrammes of the cocaine was sufficient to make this condition of anæsthesia last for about 45 minutes, after which normal sensibility slowly and gradually returned. The after-effects were, however, not always pleasant and were like those found in the surgical cases referred to above. Dr. Bier was even obliged to remain in bed for some days. It was therefore decided that further experiments should be made on animals, so that the effects might be more fully studied with a view to obviate the disagreeable effects produced by the drug and to enhance its undoubted usefulness.

ON Sept. 13th Mr. Justice Cozens-Hardy granted an application of the Jenner Institute of Preventive Medicine to enable them to alter their Memorandum of Association so as to profit by the gift from Lord Iveagh of £250,000.

WITH reference to medical men willing to serve on plague duty in India the authorities of the India Office inform us that no more are required at present, but that a list is kept at the India Office of those who are ready to go if required.

THE Colonial Office has received a telegram from the Governor of Mauritius stating that for the week ending Sept. 7th 62 cases of plague occurred, of which 51 proved fatal.

A TELEGRAM from the Governor of Hong-Kong (Sir H. A. Blake) received at the Colonial Office on Sept. 11th reports 13 cases of plague with 12 deaths for the last week.

THE nineteenth report of the Inspector of Retreats under the Inebriates Acts, 1879 and 1888, has just been issued. 14 retreats are dealt with.

THE British Association have made a grant of £1000 towards the expenses of the National Antarctic Expedition.

ANNUAL REPORT OF THE SANITARY COMMISSIONER, BENGAL, 1898.

THIS report was due on May 1st, but the delay in its issue has been occasioned by the Sanitary Commissioner having necessarily to devote so much of his time to the supervision of plague measures. The Inspector-General of Civil Hospitals has appended to it a valuable note in which he reviews the salient points in the sanitary history of the year. The number of births which were registered in 1898 was 2,540,701, against 2,625,844 in the previous year, the ratio per mille of population being 35·79 as against 36·94 in 1897. The decrease in the birth-rate was anticipated by the Sanitary Commissioner in his last report and is now considered by him as due to the low vitality of the people in the preceding year caused by the effect of famine and high prices. He points out that the number of births was everywhere considerably higher during the last five months of the year than during the earlier months, and that this was particularly noticeable in those parts of the province which were most severely affected by famine. This explanation, however, does not seem to be sufficient because the decreased birth-rate does not correspond with the districts where famine prevailed, and some districts which were classed as famine districts actually record a higher rate. It seems to be the normal state of things for an increased number of births to occur in the later months of the year. Other causes were therefore probably at work. Considerably greater accuracy in registration must be attained before the vital statistics of the province can be considered as a basis on which definite and satisfactory conclusions can be founded.

Calcutta is as usual at the bottom of the list with a birth-rate of 13·98 per mille, the departure of women from fear of plague having doubtless caused the large decrease since last year. It must be remembered, however, that the proportion of males to females in Calcutta is more than 2 to 1. The number of deaths registered in 1898 was 1,888,468, giving a ratio of 26·57 per mille as against 2,341,632 and 32·94 in the previous year. The mortality from fever and cholera was particularly low. Owing to the general absence of epidemics the death-rate of the towns fell to the remarkably low figure of 27·50, as against 35·09 last year. The death-rate among males was 28·75 per mille against the average of 30·87 for the past 10 years. Among females it was 24·40 per mille, against 26·68, the average of the preceding 10 years. Registration in the case of females is more defective. The mortality among Mussulmans is given as 29·53 per mille, as against 25·51 among Hindus. This difference is unexplained and does not occur every year. No less than 1935 persons were convicted for failure to register and Rs. 3052 were imposed in fines. Registration is probably defective to the extent of 13 per mille in the case of deaths and 11 per mille in the case of births. These are the deficiencies which are discovered by the vaccination staff. The influence of the meteorological conditions on the prevalence of fever and cholera is a perennial subject of discussion. In the present year the mortality from fever has been lower than usual and that from cholera has been the lowest ever recorded in the province.

There appears to be no satisfactory explanation of these facts. Inoculation against cholera has been carried on throughout the year at the Purulia coolie depôt and while no information is available from Assam as to its results the work is obviously a necessary one and is reported to have been well and carefully conducted. The deaths from small-pox numbered 14,269 as against 19,655 during the previous year. There was a large falling off in the number of deaths from dysentery. Expenditure on conservancy increased largely in many places apparently from fear of the plague. In many towns nothing has been spent on original sanitary works and the want of proper drains is a deficiency constantly noticed. Until outside pressure is brought to bear on some of the municipalities nothing is done. The precautions against plague consisted in the working of four large observation camps at Chausa, Chakradharpore, Mairwa, and Khurda Road. At Chausa 636,819 persons were inspected and 24,776 were detained. There were five deaths from plague. At Mairwa 177,501 persons were inspected and 4757 were detained, and at Khurda Road 110,083 persons were examined and 3478 were detained. An important experiment in sewage disposal was inaugurated. The sanitary engineer was placed on special duty in England for the purpose of inquiring into the subject and his proposal to carry out experiments on the septic tank principle has been adopted by Government. The precautionary measures taken against the plague have indirectly drawn increased attention on the part of local bodies to sanitation generally and to conservancy in particular. "Should it prove to have thoroughly and permanently awakened the local authorities to the supreme importance of an efficient system of sanitation the plague will have done the people of Bengal a service which will go far to counterbalance the trouble and anxiety which it has caused.'

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 33 of the largest English towns 6615 births and 5511 deaths were registered during the week ending Sept. 9th. The annual rate of mortality in these towns, which had been 26·8 and 25·5 per 1000 in the two preceding weeks, further fell to 25·2 last week. In London the rate was 22·2 per 1000, while it averaged 27·2 in the 32 provincial towns. The lowest death-rates in these towns were 18·1 in Birkenhead and in Leeds, 18·4 in Croydon, 19·7 in Halifax, and 20·8 in Bristol; the highest rates were 33·8 in Bolton, 35·8 in Newcastle-upon-Tyne, 36·4 in Wolverhampton, and 43·8 in Burnley. The 5511 deaths in these towns included 1588 which were referred to the principal zymotic diseases, against 1918 and 1743 in the two preceding weeks; of these, 1290 resulted from diarrhœa, 73 from measles, 68 from diphtheria, 68 from whooping-cough, 61 from fever (principally enteric), 27 from scarlet fever, and one from small-pox. The lowest death-rates from these diseases were recorded in Birkenhead, Plymouth, and Blackburn, and the highest rates in Leicester, Bolton, and Burnley. The greatest mortality from measles occurred in Burnley; from whooping-cough in Cardiff; from "fever" in Sunderland; and from diarrhœa in Manchester, Norwich, Burnley, Preston, and Bolton. The mortality from scarlet fever showed no marked excess in any of the large towns. The 68 deaths from diphtheria included 24 in London, six in Birmingham, six in Liverpool, and five in Leicester. One fatal case of small-pox was registered last week in Hull, but not one in any other of the 33 towns; and no small-pox patients were under treatment in the Metropolitan Asylums Hospitals. The number of scarlet fever patients in these hospitals and in the London Fever Hospital on Saturday last, Sept. 9th, was 2550, against 2612, 2547, and 2537 at the end of the three preceding weeks; 298 new cases were admitted during the week, against 245, 225, and 252 in the three preceding weeks. The deaths referred to diseases of the respiratory organs in London, which had been 169 and 131 in the two preceding weeks, rose again last week to 170, and were 24 above the corrected average. The causes of 42, or 0·8 per cent., of the deaths in the 33 towns were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in West Ham, Bristol, Nottingham, Leeds, and in 12 other smaller towns; the largest proportions of uncertified deaths were registered in Blackburn, Liverpool, and Sheffield.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in the eight Scotch towns, which had increased in the four preceding weeks from 17·9 to 24·1 per 1000, declined again to 22·6 during the week ending Sept. 9th, and was 2·6 per 1000 below the mean rate during the same period in the 33 large English towns. The rates in the eight Scotch towns ranged from 13·5 in Perth and 19·5 in Aberdeen to 23·5 in Leith and 31·6 in Greenock. The 689 deaths in these towns included 193 which were referred to diarrhœa, 10 to "fever," nine to whooping-cough, seven to scarlet fever, three to measles, and three to diphtheria. In all, 225 deaths resulted from these principal zymotic diseases, against 197 and 217 in the two preceding weeks. These 225 deaths were equal to an annual rate of 7·4 per 1000, which almost corresponded with the mean rate last week from the same diseases in the 33 large English towns. The fatal cases of diarrhœa, which had increased from 70 to 181 in the four preceding weeks, further rose to 193 last week, of which 86 occurred in Glasgow, 35 in Edinburgh, 26 in Dundee, and 16 in Leith. The deaths referred to different forms of "fever," which had been 13 and nine in the two preceding weeks, rose again to 10 last week, of which six were recorded in Glasgow and two in Paisley. The nine fatal cases of whooping-cough showed a decline of four from the number in the preceding week, and included six in Glasgow, where five of the seven deaths from scarlet fever were also registered. The deaths referred to diseases of the respiratory organs in these towns, which had been 61 and 83 in the two preceding weeks, declined to 54 last week, and were little more than half the number in the corresponding period of last year. The causes of 27, or nearly 4 per cent., of the deaths in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The annual rate of mortality in Dublin, which had declined in the three preceding weeks from 34·9 to 30·6 per 1000, rose again to 37·4 during the week ending Sept. 9th. During the past four weeks the death-rate in the city has averaged 33·5 per 1000, the rate during the same period being 23·4 in London and 20·2 in Edinburgh. The 251 deaths registered in Dublin during the week under notice showed an increase of 46 upon the number in the preceding week, and included 72 which were referred to the principal zymotic diseases, against 66 and 58 in the two preceding weeks; of these, 42 resulted from diarrhœa, 17 from measles, eight from "fever," two from whooping-cough, two from scarlet fever, and one from diphtheria. These 72 deaths were equal to an annual rate of 10·8 per 1000, the zymotic death-rate during the same period being 4·8 in London and 6·6 in Edinburgh. The fatal cases of diarrhœa, which had declined from 43 to 36 in the three preceding weeks, rose again to 42 last week. The deaths from measles, which had been 18 and 14 in the two preceding weeks, rose again to 17 last week. The eight deaths referred to different forms of "fever" exceeded the number recorded in any week since January, 1898. The 251 deaths in Dublin last week included 57 of infants under one year of age, and 42 of persons aged upwards of 60 years; the deaths of infants showed a slight decline from recent weekly numbers, while those of elderly persons showed a marked increase. Seven inquest cases and six deaths from violence were registered, and 102, or more than a third, of the deaths occurred in public institutions. The causes of 12, or nearly 5 per cent., of the deaths in the city last week were not certified.

VITAL STATISTICS OF LONDON DURING AUGUST, 1899.

In the accompanying table will be found summarised complete statistics relating to sickness and mortality during August in each of the 43 sanitary areas of London. With regard to the notified cases of infectious diseases in the metropolis, it appears that the number of persons reported to be suffering from one or other of the nine diseases specified in the table was equal to 8·6 per 1000 of the population, estimated at 4,546,752 persons in the middle of this year. In the three preceding months the rates had been 7·3, 9·3, and 9·8 per 1000 respectively. The rates were considerably below the average in St. George Hanover-square, Hampstead, St. Giles, St. Martin-in-the-Fields, Strand, and Lee; while they showed the largest excess in Clerkenwell, Whitechapel, St. George Southwark, Newington, Bermondsey, and Rotherhithe sanitary areas. Three cases of small-pox were notified in London during August—viz., two in the Port of London and one in Woolwich sanitary areas; one small-pox patient was admitted into the Metropolitan Asylums Hospitals during August, but none remained under treatment at the end of the month. The prevalence of scarlet fever in London showed a further decline from that recorded in the two preceding months; among the various sanitary areas this disease showed the highest proportional prevalence in Fulham, Clerkenwell, St. Luke, St. Olave Southwark, Bermondsey, Rotherhithe, and Plumstead. The Metropolitan Asylums Hospitals contained 2493 scarlet fever patients at the end of August, against 2172, 2372, and 2602 at the end of the three preceding months; the weekly admissions averaged 244, against 229, 284, and 293 in the three preceding months. The prevalence of diphtheria in London showed a decline from that recorded in the preceding month; this disease was proportionally most prevalent in Shoreditch, St. Saviour Southwark, St. George Southwark, Newington, Bermondsey, Camberwell, Greenwich, and Lewisham sanitary areas. There were 1493 diphtheria patients under treatment in the Metropolitan Asylums Hospitals at the end of August, against 1139, 1273, and 1533 at the end of the three preceding months; the weekly admissions averaged 179, against 152, 192, and 229 in the three preceding months. The prevalence of enteric fever in London showed a further marked increase upon that recorded in recent months; among the various sanitary

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING AUGUST, 1899.

(Especially compiled for THE LANCET.)

Sanitary Areas.	Estimated population in the middle of 1899.	Notified Cases of Infectious Disease.											Deaths from Principal Infectious Diseases.											Deaths from all causes.	Death-rate per 1000 living.	Deaths of infants under one year to 1000 births.
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cholera.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.†	Whooping-cough.	Typhus fever.	Enteric fever.	Other continued fevers.	Diarrhœa.	Total.	Annual rate per 1000 persons living.			
LONDON...	4,546,752	3	1543	1521	1	381	7	29	519	7	3741	8·6	—	248	34	159	120	—	65	—	2208	2834	6·5	10291	23·6	380
West Districts.																										
Paddington	128,794	—	37	12	—	8	—	—	18	—	75	6·1	—	—	—	1	—	—	4	—	52	57	4·6	236	19·1	362
Kensington	172,899	—	54	18	—	15	4	1	18	—	110	6·6	—	5	—	2	2	—	7	—	49	65	3·9	331	20·0	352
Hammersmith	108,785	—	54	17	1	5	—	1	7	—	85	8·1	—	—	—	1	2	—	—	—	55	58	5·6	226	21·7	461
Fulham	130,720	—	76	22	—	7	—	2	11	4	122	9·7	—	2	1	—	3	—	1	—	108	115	9·2	347	27·7	488
Chelsea	96,721	—	18	23	—	9	1	1	5	1	58	6·3	—	1	—	1	1	—	2	—	33	38	4·1	208	22·4	428
St. George Hanover-square	80,876	—	17	7	—	3	—	—	7	—	34	4·4	—	—	1	1	—	—	1	—	14	17	2·2	104	13·4	295
Westminster	62,117	—	26	13	—	5	—	—	4	—	48	9·6	—	1	1	1	1	—	—	—	24	28	5·6	105	21·0	459
St. James Westminster	21,827	—	10	3	—	—	—	—	—	—	13	6·2	—	—	—	—	1	—	—	—	4	5	2·4	34	16·2	235
North Districts.																										
Marylebone	140,139	—	25	18	—	13	—	1	23	—	80	6·0	—	4	2	—	4	—	2	—	47	59	4·4	259	19·3	253
Hampstead	80,252	—	21	9	—	3	—	—	9	—	42	5·5	—	—	—	—	—	—	—	—	30	30	3·9	105	13·6	373
St. Pancras	244,548	—	76	46	—	25	—	1	35	—	183	7·8	—	11	—	7	8	—	3	—	114	143	6·1	535	22·8	412
Islington	348,095	—	131	72	—	51	—	6	34	—	294	8·8	—	15	3	21	14	—	5	—	145	203	6·1	739	22·1	360
Stoke Newington	35,187	—	13	1	—	—	—	1	6	—	21	6·2	—	—	—	—	—	—	—	—	15	15	4·4	50	14·8	357
Hackney	222,571	—	99	60	—	24	—	1	26	—	210	9·8	—	6	2	5	2	—	3	—	106	124	5·8	456	21·4	386
Central Districts.																										
St. Giles	37,196	—	6	2	—	—	—	—	4	—	12	3·4	—	—	—	1	—	—	—	—	13	14	3·9	81	22·7	294
St. Martin-in-the-Fields	12,142	—	1	—	—	—	—	—	1	—	2	1·7	—	—	—	—	—	—	—	—	—	—	—	23	19·8	231
Strand	23,016	—	3	1	—	2	—	—	3	—	9	4·1	—	—	—	—	—	—	—	—	8	8	3·6	54	24·5	567
Holborn	29,621	—	10	6	—	1	—	—	8	—	25	8·8	—	—	1	1	—	—	—	—	9	11	3·9	70	24·6	279
Clerkenwell	66,068	—	37	24	—	11	—	1	6	—	79	12·5	—	1	4	2	1	—	—	—	31	39	6·2	173	27·3	333
St. Luke	40,868	—	22	7	—	—	—	—	7	—	36	9·2	—	5	—	—	2	—	—	—	23	30	7·7	140	35·7	365
City of London	27,986	—	11	6	—	3	—	—	3	—	23	8·6	—	—	—	—	1	—	1	—	5	7	2·6	58	21·6	414
East Districts.																										
Shoreditch	121,071	—	46	48	—	8	—	2	25	1	130	11·2	—	2	3	10	8	—	3	—	95	121	10·4	369	31·8	471
Bethnal Green	128,938	—	48	27	—	15	—	—	45	1	136	11·0	—	1	3	3	2	—	3	—	76	90	7·3	368	29·8	360
Whitechapel	81,391	—	25	25	—	35	—	—	9	—	94	12·0	—	2	—	2	2	—	4	—	21	31	4·0	180	23·1	285
St. George-in-the-East	48,560	—	12	13	—	2	—	—	4	—	31	6·7	—	5	—	1	3	—	—	—	27	36	7·7	160	34·4	361
Limehouse	58,807	—	7	13	—	8	—	—	4	—	32	5·7	—	6	—	1	4	—	—	—	32	43	7·6	179	31·7	494
Mile End Old Town	113,161	—	18	33	—	5	—	—	8	—	64	5·9	—	2	1	9	8	—	—	—	57	77	7·1	258	23·8	332
Poplar	170,606	—	27	43	—	9	—	2	24	—	105	6·4	—	9	1	7	12	—	3	—	131	163	10·0	452	27·6	368
South Districts.																										
St. Saviour Southwark	24,207	—	6	14	—	—	—	2	3	—	25	10·8	—	5	—	1	1	—	—	—	15	22	9·5	74	31·9	474
St. George Southwark	60,536	—	17	59	—	5	—	—	6	—	87	15·0	—	14	—	7	1	—	—	—	48	70	12·1	209	36·0	409
Newington	124,166	—	41	84	—	5	—	2	29	—	161	13·5	—	28	—	12	—	—	1	—	55	96	8·1	350	29·4	414
St. Olave Southwark	11,098	—	6	3	—	3	—	—	—	—	12	11·3	—	4	—	1	—	—	—	—	2	7	6·6	31	29·1	306
Bermondsey	85,835	—	44	55	—	9	—	—	11	—	119	14·5	—	25	—	7	2	—	1	—	40	75	9·1	253	30·7	399
Rotherhithe	41,050	—	42	13	—	2	—	—	3	—	60	15·2	—	1	1	3	—	—	1	—	21	27	6·9	101	25·7	457
Lambeth	308,108	—	71	71	—	17	2	2	26	—	189	6·4	—	23	2	12	8	—	3	—	160	213	7·2	712	24·1	375
Battersea	174,996	—	46	39	—	18	—	1	17	—	121	7·2	—	8	1	7	4	—	4	—	65	89	5·3	375	22·3	354
Wandsworth	209,655	—	58	54	—	11	—	—	12	—	135	6·7	—	7	—	6	4	—	3	—	92	112	5·6	377	18·8	364
Camberwell	264,817	—	93	120	—	21	—	1	24	—	259	10·2	—	19	2	10	4	—	4	—	134	173	6·8	560	22·1	379
Greenwich	182,513	—	82	89	—	13	—	—	23	—	207	11·8	—	24	3	6	5	—	3	—	127	168	9·6	454	25·9	425
Lewisham (excluding Penge)	91,027	—	46	38	—	3	—	—	6	—	93	10·7	—	1	1	4	2	—	2	—	54	64	7·3	182	20·9	372
Woolwich...	41,542	1	10	15	—	3	—	—	—	—	29	7·3	—	3	—	3	2	—	1	—	24	33	8·3	99	24·8	333
Lee	40,219	—	9	8	—	2	—	—	1	—	20	5·2	—	3	1	—	2	—	—	—	18	24	6·2	86	22·3	469
Plumstead	64,031	—	42	20	—	1	—	1	4	—	68	11·1	—	—	—	3	4	—	—	—	27	34	5·5	128	20·8	337
Port of London	—	2	—	—	—	1	—	—	—	—	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including 21 cases of membranous croup.

† Including deaths from membranous croup.

areas this disease showed the highest proportional prevalence in Islington, Hackney, Clerkenwell, Whitechapel, Limehouse, and St. Olave Southwark. The Metropolitan Asylums Hospitals contained 213 enteric fever patients at the end of August, against 99, 105, and 131 at the end of the three preceding months; the weekly admissions averaged 37, against 16, 20, and 26 in the three preceding months. Erysipelas was proportionally most prevalent in Marylebone, Holborn, St. Luke, Shoreditch, Bethnal Green, and Newington sanitary areas. The 29 cases of puerperal fever notified in London during August included six in Islington and two each in Fulham, Shoreditch, Poplar, St. Saviour Southwark, Newington, and Lambeth sanitary areas.

The mortality statistics in the table relate to the deaths of persons actually belonging to the various sanitary areas of the metropolis, the deaths occurring in the institutions of London having been distributed among the various sanitary areas in which the patients had previously resided. During the five weeks ending Sept. 2nd the deaths of 10,291 persons belonging to London were registered, equal to an annual rate of 23·6 per 1000, against 15·8, 14·8, and 17·2 in the three preceding months. The high rate in the metropolis during August was due to the very fatal prevalence of summer diarrhœa. The lowest death-rates last month in the various sanitary areas were 13·4 in St. George Hanover-square, 13 6 in Hampstead, 14·8 in Stoke Newington, 16·2 in St. James Westminster, 18·8 in Wandsworth, and 19·1 in Paddington; the highest rates were 31·7 in Limehouse, 31·8 in Shoreditch, 31·9 in St. Saviour Southwark, 34·4 in St. George-in-the-East, 35·7 in St. Luke, and 36·0 in St. George Southwark. During the five weeks of August 2834 deaths were referred to the principal zymotic diseases in London; of these, 248 resulted from measles, 34 from scarlet fever, 159 from diphtheria, 120 from whooping-cough, 65 from enteric fever, 2208 from diarrhœa, and not one either from small-pox, typhus, or any ill-defined form of continued fever. These 2834 deaths were equal to an annual rate of 6·5 per 1000, against 1·8 and 3 3 in the two preceding months. No death from any of these diseases was recorded last month in St. Martin-in-the-Fields; in the other sanitary areas they caused the lowest death-rates in St. George Hanover-square, St. James Westminster, Hampstead, St. Giles, Strand, Holborn, and City of London; and the highest rates in Fulham, Shoreditch, Poplar, St. Saviour Southwark, Bermondsey, and Greenwich. The 248 deaths referred to measles were 52 above the corrected average number in the corresponding periods of the 10 preceding years; this disease was proportionally most fatal in St. Luke, St. Saviour Southwark, St. George Southwark, Newington, St. Olave Southwark, and Bermondsey sanitary areas. The 34 fatal cases of scarlet fever were only one third of the corrected average number; this disease showed the highest proportional fatality in Clerkenwell sanitary area. The 159 deaths from diphtheria were 41 below the corrected average number; among the various sanitary areas this disease was proportionally most fatal in Islington, Shoreditch, Mile End Old Town, St. George Southwark, Newington, Bermondsey, and Woolwich. The 120 fatal cases of whooping-cough were 38 below the corrected average number; this disease showed the highest proportional fatality in Shoreditch, St. George-in-the-East, Limehouse, Mile End Old Town, Poplar, and Plumstead sanitary areas. The 65 deaths referred to enteric fever were 11 above the corrected average number; among the various sanitary areas this disease was proportionately most fatal in Paddington, Kensington, and Whitechapel. The 2208 fatal cases of diarrhœa were nearly double the corrected average number; this disease showed the highest proportional fatality in Fulham, Shoreditch, Poplar, St. Saviour Southwark, St. George Southwark, and Greenwich sanitary areas. In conclusion, it may be stated that the aggregate mortality in London during August from these principal zymotic diseases was more than 50 per cent. above the average, owing principally to the excessive fatality of summer diarrhœa.

Infant mortality in London last month, measured by the proportion of deaths of children under one year of age to births registered, was equal to 360 per 1000, and considerably exceeded the average. Among the various sanitary areas the lowest rates of infant mortality were recorded in St. James Westminster, Marylebone, St. Giles, St. Martin-in-the-Fields, Holborn, and Whitechapel; and the highest rates in Hammersmith, Fulham, Strand, Shoreditch, Limehouse, St. Saviour Southwark, and Lee.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

INSPECTOR-GENERAL H. D. STANISTREET and Deputy Inspectors H. M. Ellis and E. R. H. Pollard, recently promoted to those ranks, are in addition to the previous establishment, and consequently are an increase to the numerical strength of the naval medical branch. The two latter officers procure their steps after serving 24 and 21 years respectively, and at a much earlier age than usually obtains in their department, especially the last-named, whose advancement in consequence of war services has been exceptionally accelerated.

The following appointments are announced:—Staff Surgeons: J. L. Barrington to the *Medea*; H. E. South to the *Boscawen*; J. M. France to the *Barham*; H. W. G. Doyne to the *Lion*; W. Bowden, D.S.O., to the *Collingwood*; B. C. E. F. Gunn to the *Hermes*; and J. Dowson to the *Repulse*. Surgeons: E. Haines to the *Terrible*; A. R. Bankart to the *Osborne*; M. Breton to the *Hermes*; H. W. B. Shewell to the *Arrogant*; and F. F. Lobb to the *Alexandra*.

ROYAL ARMY MEDICAL CORPS.

Major E. Davis has taken over medical charge of the camp at Okehampton. Major G. W. Brazier-Creagh has joined at Woolwich for duty. Major S. F. Lougheed and Major R. E. Kelly have rejoined at Woolwich. Major R. C. Thacker has left Dublin for Newbridge. Major H. J. Wyatt has arrived in Dublin for duty and has been posted to the medical charge of Staff and Departments, South, and the medical charge of troops and their families, Marshalsea Barracks. Lieutenant W. B. Winkfield has proceeded to Canterbury. The question of the provision of a separate mess for officers of the corps is now being considered by the Government of India.

INDIA AND THE INDIAN MEDICAL SERVICES.

Lieutenant-Colonel Adam Scott Reid is promoted to be Colonel. Lieutenant-Colonel Charles Thomas Peters, Bombay Establishment, has retired. Major Ronald Ross, Madras Establishment, has retired. Lieutenant J. C. H. Leicester and Lieutenant C. Hudson have been appointed to the Bengal command; Lieutenant G. King, Lieutenant T. S. Ross, and Lieutenant G. P. T. Groube have been appointed to the Madras command. Captain F. P. Maynard, officiating Civil Surgeon of Hazaribagh, is appointed to act as Civil Surgeon of Patna. Captain E. A. R. Newman, officiating Second Resident Surgeon, Presidency General Hospital, Calcutta, is appointed to act as First Resident Surgeon in that institution. Captain E. E. Waters, officiating Superintendent of the Presidency Jail, is appointed to act as Second Resident Surgeon, Presidency General Hospital, Calcutta. Captain F. R. Ozzard has made over charge of the duties of Superintendent of the Bannu Jail to Captain J. Stephenson. Major W. A. Sykes has made over charge of the duties of Superintendent of the Sialkot Jail to Captain A. Cochrane. Lieutenant J. A. Dredge has made over charge of the duties of Superintendent of the Dera Ghazi Khan Jail to Lieutenant-Colonel S. F. Bigger. Captain H. J. K. Bamfield has made over charge of the duties of Superintendent of the Kohat Jail to Lieutenant W. H. Kenrick. Lieutenant R. H. Price has made over charge of the duties of Superintendent of the Jhelum Jail to Lieutenant H. Gidney. Captain D. T. Lane, Civil Surgeon, has resumed charge of his duties at Amritsar. On being relieved of the duties of plague medical officer, Jullundur District, Captain C. H. James is re-transferred to Kangra and has assumed charge of the civil medical duties of that district. Captain M. Dick is appointed to the officiating medical charge of the 24th Madras Infantry. Captain W. G. Pridmore is transferred from Katha to the civil medical charge of the Bhamo District. Surgeon-General R. Harvey, C.B., D.S.O., Director-General, Indian Medical Service, has returned to Simla and resumed his official duties.

The following appointments are announced:—Lieutenant E. D. W. Greig, Lieutenant C. Dykes, Lieutenant W. E. McKechnie, Lieutenant W. F. Harvey, Lieutenant W. C. H. Forster, Lieutenant J. J. Urwin, Lieutenant D. McCay, Lieutenant A. B. Fry, Lieutenant H. D. Peile, Lieutenant D. H. F. Cowin, Lieutenant E. C. G. Maddock, Lieutenant W. H. Dickinson, Lieutenant M. W. Manuk, Lieutenant

W. H. Tucker, Lieutenant A. W. Tuke, Lieutenant C. S. Lowson, Lieutenant J. H. L Beaman, Lieutenant J. Sloan, Lieutenant G. H. Stewart, Lieutenant D. N. Anderson, and Lieutenant M. N. Chandhuri.

At Ootacamund, on August 11th, Lieutenant-General Sir George Wolseley invested Surgeon-General Sibthorpe with the insignia of C.B. awarded for service in the field. Surgeon-General Taylor is making arrangements to have a supply of Professor Calmette's anti-venene for the treatment of snake-bite issued to military hospitals.

VOLUNTEER CORPS.

Rifle: 1st (Hertfordshire) Volunteer Battalion the Bedfordshire Regiment: Surgeon-Lieutenant E. F. Bindloss to be Surgeon-Captain.

MEDICAL EXAMINATION OF CANDIDATES FOR COMMISSIONS.

A communication from Surgeon-General J. B. Hamilton (retired) to our service contemporary the *Army and Navy Gazette* discusses the vexed subject of the medical examination of candidates for commissions in a sensible and fair way. It is worth hearing what can be said from a medical officer's point of view in vindication of the much-abused War Office system. It was at the suggestion of this officer that the present plan of examining only those candidates who had succeeded in passing the competitive examination was introduced as a substitute for the old method whereby all the candidates had to be medically inspected and pronounced physically fit before entering on the competitive examination. As the number in the latter category was out of all proportion to that of the former—namely, those who were successful—it follows that the labour imposed on the medical examiners was very great and on that account more likely to be hurried and attended with mistakes. Surgeon-General Hamilton contends that under the former system 900 candidates were kept idle in London for two days before the literary examination, and if only 100 commissions were given 800 or 900 candidates were uselessly examined, whereas now only the 100 successful ones are brought up to London in order to attend the physical examination which can be more carefully performed. If parents and guardians, says Surgeon-General Hamilton, would only follow the instructions officially laid down and issued to them and consult their medical attendants beforehand not 1 per cent. of the candidates would be subsequently rejected. There seems to be sense in this suggestion.

Correspondence.

"Audi alteram partem."

"DEATH CERTIFICATION: CORONERS AND THE REGISTRAR-GENERAL."

To the Editors of THE LANCET.

SIRS,—In an annotation in THE LANCET of August 26th you refer to the responsibility of coroners in cases of uncertified deaths. *In limine* I will ask you whether a death can be said to be uncertified outside the technical certification by a registered medical practitioner the circumstances of which have been investigated by a coroner? It appears to me that in a certain number of cases, at all events, the death is much more a certified one in the latter than in the former case. Long before I became coroner the question was one to which my attention was directed and on taking office the procedure necessary for legal purposes and for the purposes of registration appeared to me to be exceedingly simple. The holding of an inquest in order to obtain facts connected with the disease from which the deceased person died, which facts are already before the coroner, has appeared to me to be an unnecessary waste of public funds, to put the matter on its lowest basis. After the coroner has made his inquiry and has authorised the registrar to register the death on the information of "an ordinary informant" surely the registration authorities must conclude that the ordinary informant is in possession of the correct cause of death. In a certain number of cases reported to me, for instance, I have evidence which convinces me that the alleged cause of death is the correct one; I do not in these cases hold an inquest unless there are other circumstances connected with the death which merit an investigation. I am quite aware that some medico-legal knowledge is required in order that the system can be worked satisfactorily, but this, after all, is only an argument in favour of the appointment to the office of coroner of gentlemen with such knowledge. The Coroners Act of 1887, section 3, subsection (1), enacts: "When a coroner is informed that the dead body is lying within his jurisdiction and there is reasonable cause to suspect that such person has died either a violent or an unnatural death, or has died a sudden death of which the cause is unknown, ... he shall as soon as practicable issue his warrant." It appears to me therefore that if the coroner is satisfied that the cause of death is known and there are no circumstances connected with the death which merit investigation it is quite unnecessary for him to hold an inquest. It is quite plain from the section of the Act quoted above that in all cases of sudden death an inquest is not a necessity.

I am, Sirs, yours faithfully,

Hatfield, Herts, Sept. 6th, 1899. LOVELL DRAGE.

PASTEUR FILTRATION AND ENTERIC FEVER.

To the Editors of THE LANCET.

SIRS,—In reference to your notice of a paper by Dr. Nollet,[1] physician in the French Navy, on the epidemic of enteric fever which occurred from November to January last in the various barracks of Cherbourg, I should be glad to be allowed to point out that the epidemic attacked no troops whose drinking-water was subjected to Pasteur filtration. This fact is stated in terms by Dr. Nollet, whose paper you recently reviewed, in regard to the whole of the marine forces, among whom occurred 549 out of the total of 623 cases, or 88 per cent. Among the military forces, according to the same authority, only sporadic cases occurred during the first two-thirds of the epidemic (November, 1898, to Jan. 1st, 1899), and in the course of that period boiling was substituted for Pasteur filtration, apparently to provide for the large excess of troops which were being concentrated at Cherbourg in view of the Fashoda complications. The number of these sporadic cases is not stated, but the total deaths from enteric fever among the whole of the troops for the year remained the same as in the previous year (3). Enteric fever has been endemic in Cherbourg for over 20 years, and, as Dr. Nollet mentions, a certain amount of infection has been shown to be inevitably acquired by soldiers in the town and imported into barracks.

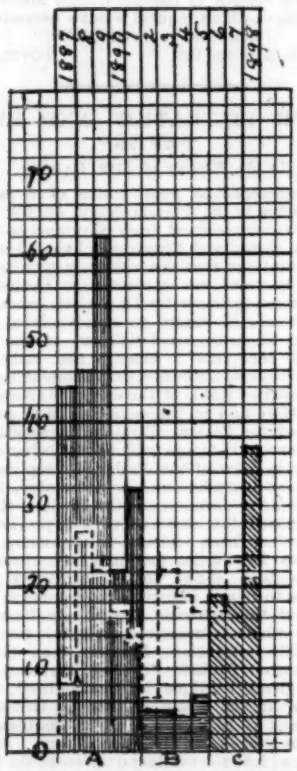
The facts of this epidemic accordingly throw no light on the influence which is exercised on enteric fever by Pasteur filtration. This influence is, however, seen clearly in the complete report on Typhoid Fever at Cherbourg made to the Comité d'Hygiène Publique by Dr. Vaillard, Professor of Epidemiology at the École du Val du Grâce.[2] From at least as far back as 1886 typhoid fever has been endemic in the military as well as the civil populations. Pasteur filters were introduced into the military quarters at the beginning of 1890 and into the marine quarters at the beginning of 1892. In Dr. Vaillard's words, the application of these filters "caused a remarkable, considerable, and constant diminution in the mortality from typhoid fever" of the troops, while that "of the civil population supplied with the same water remained high and showed no sign of decrease."

Results of this kind have been plentiful enough with Pasteur filtration[3] and in my judgment constitute its most trustworthy credential as a practical appliance. In the present cases, however, the conclusion which would naturally be drawn from such facts was verified in a somewhat unusual manner. The disease did not wholly disappear among the troops. It had been demonstrated that in numerous instances the infection in these cases had been imported from the town or other infected place not protected by Pasteur filtration. This circumstance, however, was held not to exclude the possibility that other cases had arisen from insufficiency of the filtration in barracks. If I were concerned to criticise this view I should observe that one would have expected the pollution of the water-supply through the failure of the filters to have produced more than sporadic cases, having regard to the

[1] THE LANCET, August 5th, 1899, p. 363.
[2] Séance of April 10th, 1899.
[3] See THE LANCET, June 1st, 1895, p. 1388.

demonstrated pollution of the crude supply. However that may be, the water of the marine troops was in 1896 and in subsequent years purified by boiling instead of by Pasteur filtration. There can be no question as to the trustworthiness of boiling against the Eberth bacillus, which perishes below 70° C.; and the subsequent experience of the marine troops, who continued to use the same polluted supply, only boiled instead of Pasteurised, serves therefore as a blank experiment to determine whether the remnant of enteric fever which had persisted during the Pasteurising period was or was not within the limit of the infection inevitable through importation from the infected town and other causes external to the water-supply of the barracks. The actual results are exhibited in the following two charts.

CHART 1.

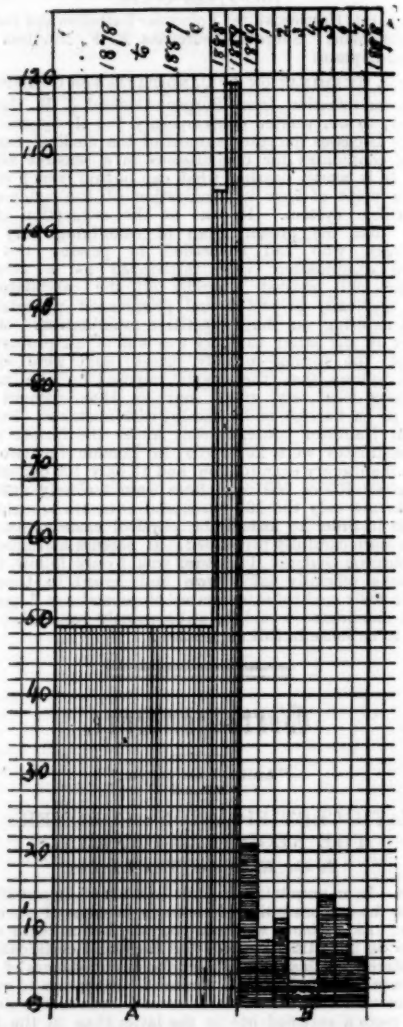


Marine Forces, 1887-98: Enteric mortality during periods (A) 1887-91 crude water; (B) 1892-95 Pasteur filtration; and (C) 1896-98 boiled water. The same town crude supply was used during all three periods; the civil enteric mortality is dotted in.

The normal strength of the marine forces is 5280. The annual enteric mortality in the years prior to Pasteur filtration was thus about 10 per 1000; in the four years of Pasteur filtration about 1 per 1000; and in the three years of boiling about 2 per 1000, excluding the epidemic year. It is evident therefore that the extent of infection liable to be acquired by the men in the town and elsewhere outside barracks, measured by the experience of the boiled-water years, is substantially more than that which actually occurred in any year of Pasteur filtration. Such infection is accordingly more than sufficient to explain the sporadic cases which persisted; and it follows that the Pasteur filtration at Cherbourg during the four years 1892-95 not only reduced the gross enteric rate of the marine forces by 90 per cent., but gave absolute protection against all enteric pollution contained in the water which passed through the filters. In the case of the military forces the blank experiment with boiled water, though it gave a result of the same kind, had been conducted for too short a time to allow conclusions to be drawn from it; but in the presence of a reduction of at least equal extent in the number of enteric cases, persisting during the whole nine years of the Pasteur filtration, I think that a blank experiment is scarcely necessary to warrant the same conclusion.

The answer to Dr. Nollet's doubt whether the Pasteur filters at Cherbourg could do their work with the admittedly foul water and rough handling which they received lies therefore in these figures, which show how for years they have done it. His suggestion, however, that their filtrate should

CHART 2.



Military Forces, 1878-98: Enteric cases during periods (A) 1878-89 crude water; and (B) 1890-98 Pasteur filtration. The same crude water-supply was used during both periods.

as a test of its purity be examined daily for nitrites (!) is sufficiently curious in the circumstances to deserve a word of comment. It is common knowledge among all who have had any practical experience of water examination that nitrites are often, if not usually, absent from even grossly polluted waters; that if they were present in the unfiltered water they would probably also appear in the sterile filtrate from a perfect bacterial filter; and that if they were present in the unfiltered water and absent from the filtrate, the fact would give absolutely no information as to the bacterial efficiency of the particular filter. If Dr. Nollet will refer to the analysis made for the Comité d'Hygiène by M. Bordas he will find, for instance, that the Cherbourg town water,

analysed during the particular epidemic in question, contained no nitrites whatever; and even in his own paper he observes that, apart from excess of organic matter, its chemical composition was satisfactory.

I am, Sirs, yours faithfully,

Houndsditch, August 23rd, 1899. WOLF DEFRIES.

MEDICAL ORGANISATION: PROPOSED SCHEME.

To the Editors of THE LANCET.

SIRS,—I enclose you a copy of a circular that is being distributed at the instance of the Medical Guild, Manchester, amongst the secretaries of all associations of general practitioners in England and Wales about whose existence we have been able to obtain definite information. For a good deal of that information we are indebted to your Special Commissioner. We fear, however, that many societies exist about which we have been unable to learn anything and we appeal, therefore, to you to help the work by printing this letter, if possible in your next issue. In this way we may be able to reach all parts of the country and I shall be glad if any secretary who has not received a circular will communicate with me at once. I should like to mention one or two points with regard to the proposed conference. In the first place, it is proposed that it should be a conference of delegates elected by each medical society to represent its members. In this way it would be elected by, and speak in the name of, a large section of the profession. Each delegate would, in fact, have the authority of perhaps 30 or 40 of his brother practitioners behind him. In the second place, it is intended to be *national* in character, although it is of necessity organised locally in the first instance. Thirdly, it is hoped that the conference if it meets will elect a central executive committee whose business it shall be to perpetuate the work and perfect the organisation of the profession.

By means of this organisation each individual practitioner in the country would have, if he chose, his share of representation at its annual conference and would be able to exercise through it his influence on all questions affecting the welfare of the profession. We are somewhat sanguine, therefore, in appealing to all general practitioners in England and Wales to exercise all the influence they possess to secure the representation of every society at the proposed conference. As it is not proposed to hold that before the spring of 1900 there is ample time to form new societies in districts which do not already possess them and it is hoped that men who are really anxious to further their own interests, as well as those of their fellows, will take steps in this direction.

I do not know that I need dwell upon the necessity—the present necessity—for organisation along these lines. The work of your Special Commissioner has done a great deal to make known the evils under which the general practitioners suffer and the steady encroachments on their prerogatives that are continually being made. Under these circumstances it is absolutely essential that we stand together shoulder to shoulder. We shall then not only be able to resist aggression effectually but be in a position to uphold the dignity of the profession and have in our hands the machinery with which to improve its status. Thanking you in anticipation for the insertion of this letter,

I am, Sirs, yours faithfully,

S. CRAWSHAW, M.B. Vict.,

Secretary to the Conference Committee of the Medical Guild.

Ashton-under-Lyne, Sept. 11th, 1899.

PLAGUE PREVENTIVES.

To the Editors of THE LANCET.

SIRS,—In THE LANCET of July 29th, 1899, p. 308, your Hong-Kong correspondent has stated as follows: "Plague is increasing in Hong-Kong and the whole of the western part of the city is declared to be infected." "No very great efforts are being made to diminish or to stamp out the epidemic. Cleansing and whitewashing of the city proceed and Haffkine's prophylactic serum is imported, but no one seems to want to be inoculated with it."

In the Baroda State in India since nearly a year use has been freely made of plague preventive pills (each containing two grains of quinine, a quarter of a grain of ipecacuanha, a quarter of a grain of camphor, and a quarter of a minim of carbolic acid) in plague-stricken places. Thousands of these pills are freely distributed and people are advised to take them daily, two each, one at a time, and the results are satisfactory.

In my evidence before the Plague Commission I stated as follows: "Medical men, nurses, and menials, numbering in all 171 persons and working in Government plague hospitals, were advised to take the pills daily, two each, one in the morning and another in the evening, and the result was that only one servant in the Dalyawadi Plague Hospital in Baroda was attacked with plague, but he got well. One nurse in connexion with the Savli Plague Hospital succumbed to the disease. On making inquiries it was found that the nurse had never used the pills. Another nurse and one compounder escaped with a mild attack of the disease. From the accounts that have appeared in newspapers regarding the evidence given by medical officers before the Plague Commission it seems that eight servants and four hospital assistants connected with plague hospitals in Bangalore were attacked with plague, of whom seven servants and all the four hospital assistants died and only one servant recovered." "Some medical men and nurses working in plague hospitals fell victims to the disease at Bombay and elsewhere."

Now the question arises as to why medical men, nurses, and servants working in plague hospitals in the Baroda territory should have suffered so little as compared with hospital assistants and servants attached to plague hospitals at Bangalore. It is very likely that it was the use of the pills that saved the medical men, &c., of the plague hospitals in the Baroda State. I submitted to the Plague Commission two statements, giving names of infected villages and towns, their population, total number of attacks and deaths, and the duration of the epidemic at each place. One statement contained the names of those 56 villages and towns where the pills were not used as they had not then been introduced, and another showed the names of those 15 places in which they were freely made use of.

The following tabular statement gives the average figures of duration of the epidemic, the average number of attacks, and the average number of deaths:—

—	Average duration of the epidemic.	Average number of attacks.	Average number of deaths.
Villages and towns where the pills had not been used	40·6 days	27·2	21·2
Villages and towns where the pills had been freely made use of	33·8 days	16·8	11·4

From this it would appear that where the pills had been used the average duration of the epidemic was comparatively short and the average number of seizures and that of deaths were reduced by 38·3 and 46·3 per cent. respectively. Under these circumstances it would be advisable to use the said pills freely at Hong-Kong and other plague-stricken towns. Daily burning of fresh Nim (Azadirachta Indica) leaves so as to produce dense smoke in houses, whether infected or not, has been found in some villages to be a good precaution against plague. This is a very cheap and useful measure against the epidemic and deserves a further trial.

I am, Sirs, yours faithfully,

Baroda, August 24th, 1899. SHAMSUDIN J. SULEMANI.

MINERAL POISONING.

To the Editors of THE LANCET.

SIRS,—Is it a fact, as I have recently been given to understand, that there is an Act of Parliament in force which compels any member of the profession, under fine and imprisonment, to notify directly to the Home Secretary any cases of accidental poisoning by certain scheduled minerals—viz., lead, mercury, &c.—that may come under his treatment and observation? Although it is a legal fiction that every British subject is supposed to know the law, if such an Act be in existence I believe there are a large number of medical men, including myself, who are in total ignorance of it and

of its provisions. As lead poisoning is far from infrequent, many of us may thus unconsciously be rendering ourselves liable to legal pains and penalties.

I am, Sirs, yours faithfully,

ALFRED RAWLINGS.

Herne Street, near Canterbury, Sept. 5th, 1899.

*** There is no obligation to notify to the Home Secretary. By Section 29 of the Factory and Workshop Act, 1895, any medical practitioner attending or called in to visit a patient whom he believes to be suffering from lead, phosphorus, or arsenical poisoning *contracted in any factory or workshop* must notify the case to the Chief Inspector of Factories. This section was extended to cases of mercurial poisoning by an order of March 27th, 1899. Leaflets containing the above information were circulated, we understand, by the Home Office among medical practitioners in the districts most likely to be affected.—ED. L.

THE MALARIA EXPEDITION TO WEST AFRICA.

(FROM A CORRESPONDENT.)

WILBERFORCE, mentioned in my last communication as the temporary station of the 3rd West India Regiment, is situated just over the crest of the hills which back Freetown on the west side. The village is about 400 ft. above sea-level and is occupied by the barracks and a small number of native huts. The district is only cleared of bush immediately around the barracks. Towards the sea the hill slopes down for a distance of about four miles to the coast; this slope is interrupted half way down by a swampy terrace covered only by a short grass. The country along the shore is also very swampy. These swampy patches are looked upon as the breeding grounds of myriads of mosquitoes, the prevailing wind, from seaward, being supposed to carry the mosquitoes up the hill to the village. Several excursions have been made by the expedition to the neighbourhood of this village and many mosquitoes of the genus anopheles have been caught at the barracks, but the breeding places have not yet been found. Several small streams run down the hillside to the sea, making, in places, small puddles of water in the rock. These contained no mosquito larvæ, but it was surmised that they might serve as breeding places, when, at the beginning of the dry season, the torrents had ceased to scour them out—they would then be left for several days as isolated puddles. At one spot was a regular dumping ground for old disused tins, cans, bottles, &c., from the barracks and those that held water were found to be full of the larvæ of culex. A systematic and thorough search of the marshy terrace was made by members of the expedition helped by several native servants, but no larvæ of any description were found. In fact, it was from the first thought highly improbable that this could form a breeding ground, being about two miles from the barracks, separated from them by a belt of thick bush through which the mosquitoes would have to filter, and further, the mosquitoes, heavily laden with eggs, would be required by this theory to fly a distance of two miles against the wind. A much nearer spot had therefore to be sought for, and accordingly the neighbourhood of the village huts was tried, but again unsuccessfully. Collections of water around the barracks were also searched in vain. It is now thought that the mosquitoes found about the barracks must be old insects which have survived since the beginning of the rainy season. Some 50 have been caught, all gorged with blood, and one in every three has been found on dissection to be infected—some showing recent "zygotes," some in various stages of maturity, others empty capsules and infected veneno-salivary glands; in fact, every stage of the development of quartan, tertian, and æstivo-autumnal infection is displayed. Mosquitoes are caught almost daily in the barracks, but are evidently becoming scarcer, being now difficult to find; at the same time the medical officer reports a considerable decrease in the number of fever cases in hospital.

Cases containing "crescents" are still very rare; at present only two cases have been seen—one in a very severe case, the patient's blood showing about one in every eight corpuscles to be infected. Even in this case the number of crescents was by no means numerous. The other case was a mixed infection of quartan and æstivo-autumnal. Numerous mosquitoes (anopheles) continue to be caught at Kissy, but a complete search has not yet been made for larvæ.

A single specimen of a third species of anopheles has been caught at Government House, the residence of the Governor of the colony, situated in the middle of the town. No specimen beyond this has been obtained from the town itself; but from the fact that several cases of fever have been reported among inhabitants of the town and, further, that anopheles larvæ have been found at two places in the town, there can be no doubt that the anopheles is plentiful there. A vigorous search has now been instituted in the town. The two breeding-places mentioned are as follows:—

1. A tub of water outside the sanitary offices. This was discovered by Dr. Prout, the Principal Colonial Medical Officer. It was watched and two mosquitoes have already hatched out from these larvæ and been captured. They were undoubtedly anopheles.

2. A small water-puddle in the road leading to Wilberforce, but in the centre of the most thickly populated part of the town. The principal roads in Freetown run steeply down from the hills towards the sea. These are deeply guttered on each side. The gutters are well scoured out during the heavy rains so that water seldom lodges for more than a few hours. Across these roads run others very badly drained and here, just in front of the houses, one often meets pools of water which last for days. It was in such a puddle that the anopheles larvæ were discovered. They have been watched growing for some four days in spite of some very heavy showers which threatened to wash them all out. They will apparently soon become pupæ and hatch out.

I hope to be able to give a short description of the larvæ and the three species of anopheles later.

Several Tsetse flies were seen at Wilberforce during the examination of the mountain streams. They were similar to those from Kissy mentioned last week.

The German Consul died here during the past week from blackwater fever. Unfortunately the members of the expedition became acquainted with the case rather too late after the first onset of the disease. However, a careful examination of several specimens of blood showed *no* malarial parasite. The patient admitted that he had taken shortly before large doses of quinine. From the history of several cases which have occurred here, and more especially from one or two very striking cases, the colonial officers at Sierra Leone are obtaining evidence tending to confirm Koch's observations as to the connexion between blackwater fever and quinine poisoning.

Freetown, August 28th.

NOTES FROM INDIA.

(FROM OUR SPECIAL CORRESPONDENT.)

Terrible Plague Mortality at Poona.—Reappearance of the Disease in Hyderabad (Sind).—The Prevalence of Enteric Fever among British Officers in India.

IMAGINE a death-rate of over 500 per 1000 per annum and you will have some idea of the frightful mortality in Poona city during the past two weeks. Very few shops remain open and business is nearly at a standstill. Dead rats in large numbers were discovered in the quarters of the Southern Mahratta Railway employés, some being actually observed dropping dead from the roofs. It is said that through fear of increasing the panic the authorities refuse to publish the total number of plague patients in the hospitals. With a considerably diminished population by the exodus of the people there has nevertheless been a weekly mortality of over 1000. Nearly the whole of this is due to plague. It will be remembered that the disease reappeared in this city in February but seemed to slumber until June. Then it broke out with great virulence. The average number in hospital has been about 500 since August 1st. The staff of nurses is quite inadequate and ward boys and ward attendants have been very

scarce. The miseries of the people almost defy description. "One could fill books with stories of sorrow and sadness at the burning ghâts. Those who have witnessed them tell of direful scenes owing to the vast number of cremations going forward day by day. Fuel is scarce and dear. Owing to the fear of catching the plague few persons go to the ghâts. Bodies are placed upon the pyre, the fire is lighted, and the mourners very often depart incontinently, leaving the fire to complete its work unwatched."

I now have to record a reappearance of plague at Hyderabad in Sind. Since August 9th 50 deaths have occurred and the total mortality from all causes has been very high. The type of the disease is reported as being very virulent. The whole town appears to be infected, several streets are being rapidly evacuated, and the population is taking to flight. There is great dread of plague restrictions. Karachi, which has received the greater number of the frightened inhabitants, has been almost free from plague for some weeks past, but the effect of the influx will be anxiously watched during the next week or two.

In Bombay the recorded cases of plague continue at about from 60 to 80 per week. In Calcutta also a minimum seems to have been reached, but the suspected plague deaths reported weekly amount to between 30 and 40. In both cities there are probably more deaths from plague than become known to the authorities, but of the two cities the returns from Calcutta are likely to be the more accurate.

A panic is feared at Bangalore. Plague has reappeared and deaths have occurred both in the city and the cantonment. Fear of removal to the observation camp coupled with the idea that the authorities have recommended inoculation seems to have created unreasonable alarm and the natives are getting ready to leave the place at a moment's notice. In the Mysore province the plague has now been existent for just over a twelvemonth and the following figures show the extent of its ravages: Bangalore city has had 3377 cases and 2787 deaths; the cantonment, 4040 cases and 3330 deaths; the district, 5347 cases and 4746 deaths; Mysore city, 2759 cases and 2238 deaths; the district, 956 cases and 704 deaths; and the Kolar district and goldfields, 2303 cases and 1823 deaths. Other places bring the total up to 19,840 cases with 16,320 deaths during the past twelve months.

The prevalence of enteric fever among the young officers of the British regiments in India has recently been explained as due to the different manner in which British and native regimental messes are managed. There is little doubt that the young officers of British regiments are more frequently attacked than those of the Staff Corps. Both sets of officers are healthy and athletic young Englishmen of the upper or upper middle-classes, and why one set should suffer more frequently than the other demands diligent inquiry. It is said that the officers of the British regiments are more new to the country and thus more susceptible, but it is also said that the messes of the native regiments are managed with far greater care and efficiency and that in them much more control and supervision are exercised over the *khansamah* and the native *ménage*. The cleanliness of the *deychies* and the purity of the milk- and water-supply are in most of the British regiments left too much in the hands of the native servants. The careless disregard of what we should demand as obvious precautions is characteristic of native habits in cookery. No native servant, unless efficiently supervised, can be trusted to carry out orders regarding sanitary precautions or cleanliness. It is very possible, therefore, that the difference in the messes may account for some of the excess in the amount of enteric fever among the officers of the British regiments. Considering how very much enteric fever has increased in India during the past few years a scientific inquiry is urgently called for.

August 24th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Sanitary Association of Scotland.

THE annual Congress of this Association has during the past week been meeting at Hawick. In the report submitted by the secretary mention is made of the improved conditions now insisted on in the examinations for the Association's certificate granted to sanitary inspectors. The report adversely criticises the Act dealing with the sale of food and drugs which was passed through Parliament last session. This, it is contended, is generally inadequate and unsatisfactory, more especially in the clauses which deal with the sale of margarine and in the provision which permits an invoice to be quoted as equivalent to a warranty. The council advocates the amendment and consolidation of the Food and Drugs and the Margarine Acts. In the various papers and discussions which have formed the business of the Congress the subject of tuberculosis has naturally found a prominent place. Dr. A. K. Chalmers in his address on demitting office as president expressed the opinion that there was apparently a danger of forgetting that the death-rate from consumption had been steadily going down, in Scotland since 1870 and in England from the sixties. He welcomed the new crusade against tuberculosis, but considered that the undoubted results already obtained had followed the pursuit of certain definite lines of action, and that further progress would be best promoted by a thorough understanding of the policy which had already provided for itself a practical justification. In a later discussion on the subject, Dr. W. Leslie Mackenzie proposed that power should be given to local authorities to demand compulsory notification of phthisis if they thought fit to do so, but Dr. A. Campbell Munro and Dr. J. C. McVail agreed that public opinion was not ripe for compulsory notification. Dr. Munro, however, thought it had become the duty of local authorities to make a certain provision for the isolation of cases of consumption, and Dr. McVail suggested that medical men might voluntarily notify cases that could usefully be isolated. Attention was drawn by Dr. James Erskine to the practice of the Glasgow authorities who offer disinfection in every case of death from phthisis, and he thought that this procedure might be generally adopted. An interesting paper on the Disposal of Sewage Sludge was read by Mr. Melvin, manager of the Glasgow Corporation sewage works. Mr. Melvin agreed with the statement that the sewage problem was from a practical point of view very largely a question of disposal of the sludge. The various methods adopted for the destruction of this he regarded as unsatisfactory and wasteful. They destroyed by expensive processes material which was of great value for agricultural purposes. Experience at Glasgow was showing that this truth was gradually being realised by farmers who were now purchasing pressed sludge cake in large quantities, whereas a few years ago they would not accept it as a gift. Mr. Melvin stated that at the present moment a syndicate was negotiating with the corporation for the purchase of no less than 1,000,000 tons of pressed sludge cake, the intention being to use this as a basis for the construction of various forms of compound manures. The importance of this is obvious, for it removes the one objection to the precipitation process of dealing with sewage—viz., that the refuse is useless. Various other subjects were discussed and the meeting of the Association, which included a number of social distractions, was altogether an encouraging success.

The Aberdeen Cemetery Scandal.

William Coutts, late superintendent of Nellfield Cemetery, was tried on Sept. 6th, 7th, 8th, and 9th, in a circuit High Court of Justiciary held at Aberdeen before Lord McLaren and a jury, on six charges of "violation of sepulchre" and one of perjury. Though the evidence for the prosecution (which was at the instance of the Crown) was fully heard it was found unnecessary to lead evidence for the defence as the accused tendered a plea of guilty to two of the charges of violating sepulchres, and this plea was accepted by the Lord-Advocate Depute. Coutts was convicted accordingly and sentenced to six months' imprisonment. These cases referred to two bodies which were taken out of the lairs in which they were originally buried and removed in one case to another lair and in the other thrown into a hole in a walk. Lord McLaren hoped the exposure which had taken place would prove an effective safeguard against the continuance of malpractices in any cemetery in Scotland. He not only commented generally on the revolting and shocking details concerning interments in the cemetery, but specially referred to those cases where bodies which had been buried for only one, two, or three years, and which were found lying, as the witnesses stated, fresh in their unsoiled graveclothes, had been taken out and disposed of with callous brutality. The chief witnesses were former gravediggers or gardeners at the cemetery, who being accepted as "Queen's evidence" were all assured that no proceedings would be taken against

them. One of these was arrested on a judicial warrant at Liverpool, in the belief that he intended to "flee the country."

Sept. 12th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Typhoid Fever at the Royal Irish Constabulary Depôt.

THERE have been several cases of typhoid fever during the last month at the depôt of the Royal Irish Constabulary in Phœnix Park. The patients were removed to Dr. Steevens' Hospital, where there are now no less than ten members of the force under treatment for that disease. Careful investigations are being made as to the cause of the outbreak.

Honours to Hospital Nurses in Ireland.

An interesting ceremony took place at the Curragh Camp on August 26th, when Miss Combe laid the foundation-stone of the Alexandra Nurses' Home. The building is so called by the special request of Her Royal Highness the Princess of Wales who is President of the Soldiers' and Sailors' Families Association. Major-General Combe gave a short account of the origin and establishment of the home and mentioned that it was indebted to Lord Wolseley for two generous grants from the Wolseley Tournament Fund. The Irish branch of the Queen's Jubilee Institute for Nurses had recently the honour of being received at the Viceregal Lodge by Her Excellency the Countess Cadogan who presented them with their badges and certificates in the presence of the Lord Lieutenant.

Queen's College, Belfast: the President's Report.

The report just issued of the President of Queen's College, Belfast, shows that during the last year, 1898–99, there were 359 students, the large majority of whom (206) were in the faculty of medicine. Reference is made to the fact that lectures began on Oct. 18th, much sooner than was formerly the case. There is a strong feeling that it would be much wiser if lectures in all the faculties could begin on Oct. 1st, but this could only be carried out if the Royal University examinations commenced about the middle of September or a fortnight earlier than at present. In the coming session medical lectures will commence on Oct. 17th, whilst in the Faculty of Arts the date of beginning work is Oct. 30th, which makes the first term very short. During the past year 757 works were added to the library, which now consists of 55,000 volumes. The Natural History Museum has been enlarged and further progress has been made in the re-arranging and cataloguing of the Medical Museum, and a new museum of hygiene has been established, owing to the energy of Dr. Henry O'Neill of Belfast, a former student of the College. The report indicates that all departments of Queen's College, Belfast, are in a flourishing condition.

The British Association.

At an influential and largely attended meeting of the citizens of Belfast held on Sept. 11th, under the presidency of the Lord Mayor, it was decided, on the motion of the Earl of Shaftesbury, to invite the members of the British Association to meet in Belfast at an early date and a deputation with this object in view was appointed to go to the Dover meeting. The British Association met in Belfast in 1852 and again in 1874.

The Union Infirmary.

Mr. Andrew McCornell having resigned his position as visiting medical officer of the Belfast Union Infirmary, a post which he has held for many years, an active canvass is taking place for the appointment. It is not yet settled whether the guardians will choose a successor as an extern officer or make the position one of intern medical superintendent with a good salary.

The Chair of Medicine in Queen's College, Belfast.

The Professorship of Medicine in Queen's College, Belfast, being now vacant candidates will be obliged to forward their applications with testimonials to the Under Secretary, Dublin Castle, on or before Sept. 25th. There are two candidates in the field. One is Dr. J. A. Lindsay, a well-known and most successful teacher, on whose behalf two memorials have been presented to the President of Queen's College, Belfast, one signed by a large number of medical practitioners in Ulster and the other submitted by the medical students of the school, both urging that in the interest of the Belfast School of Medicine Dr. Lindsay should be appointed to the chair. The other candidate is Dr. James Moorhead (Surgeon-Lieutenant-Colonel, Indian Medical Service) who after a distinguished career as a medical student in Belfast subsequently joined the Indian Medical Service and who, since his retirement from that service a few years ago, has resided in Belfast. The general opinion is that Dr. Lindsay will be appointed Professor of Medicine and that the new lectureship on tropical diseases will be given to Dr. Moorhead. By such an arrangement the Belfast School of Medicine will be much strengthened.

Sept. 12th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Paris Municipal Council and the Hospitals.

THE increase of the population of Paris, especially in the suburbs, has made it evident that changes are required in the number and apportionment of the hospitals—changes which amount to a complete remodelling of the existing institutions. The Prefect of the Seine has officially recommended the immediate erection of a hospital of 500 beds on the right bank of the river and the reconstruction of several hospitals—namely, the Hôpital de la Pitié, the Hôpital d'Aubervilliers, the Hôpital Broussais, and the Hôpital Broca; he also recommends the combination of the Hôpital Cochin and the Hôpital Ricord in a special hospital for diseases of the skin, syphilis, and ringworm. For the treatment of children the proper course would be the reconstruction of the Hospital for Sick Children and the erection outside Paris of a hospital of 200 beds for patients suffering from tuberculous disease of the bones. With regard to the *hospices*, the Hospice la Rochefoucauld would be enlarged and two pavilions for 1400 aged persons would be built at Brévannes. The City of Paris would in this way have at its disposal 2888 new beds, of which 1088 would be for adults, 200 for children, and 1600 in the *hospices*. Each bed being estimated to cost 11,000 francs, the total outlay would amount to 72,062,800 francs, not including 1080 francs required for the expenses of the loan. The municipal council considers this scheme to be insufficient and inadequate to the steadily growing necessities of the case. In short, the council wishes to have the hospitals in the central parts of the city pulled down and new buildings erected outside the walls. The reasons assigned for this are that the hospitals in the central districts are old and do not answer the requirements of modern hygiene and surgery, although money is always being spent in fitting up new and very costly operating theatres in the old buildings. Their situation in the centre of the city makes them difficult of access for the working people who form the bulk of the patients, almost all of whom live in distant suburbs. It must also be mentioned that the majority of the municipal councillors are socialists elected by the suburban population, whilst the central districts of Paris elect councillors who hold more moderate political opinions and at the same time form a powerless minority in the council. Moreover, it must be recognised that the city of Paris would benefit financially by the proposed changes, for the old hospitals stand in well-to-do neighbourhoods and the sale of their sites would yield a sum probably large enough to cover all the expenses of building new hospitals in the suburbs. It is estimated that the site of the Hôpital de la Charité would fetch 4,604,000 francs, that of the Hôpital Beaujon, situated in the *quartier* of the Champs Elysées, 13,925,000 francs, that of the Hôpital Laennec 6,860,000 francs, that of the extension of the Hôtel Dieu 2,710,000 francs, that of the Hôpital Andral 810,000 francs, that of the municipal Maison de Santé (known as the Maison Dubois) 3,100,000 francs. These prices have been calculated on the basis of the present value of the land, reckoned at so much per square metre in the respective localities of these different hospitals. The whole would produce a sum of 32,000,000 francs, which the council thinks would be sufficient for the building and complete furnishing of new hospitals situated outside Paris with accommodation for 2888 beds. It is true that the cost per bed is assumed to be 9000 francs instead of 11,000 francs as estimated, and no doubt more correctly, by the Prefect

of the Seine. Three entirely new institutions would then be built, one of 800 beds between Saint-Ouen and Aubervilliers, one of 800 beds at Neuilly, and one of 600 beds somewhere to the south; 267 beds would also be added to the Hôpital Boucicaut. In the next place, the children's hospitals would be proceeded with. The closing of the Hôpital Trousseau (Children's Hospital) has now been decided on, and three new hospitals will be built, the cost of which, estimated at 7,714,600 francs, is covered beforehand by the proceeds of the sale of the Hôpital Trousseau added to some other financial resources. From the point of view of medical education this removal of the hospitals to distant localities will probably not be to the liking of either the medical staff or the students. It must be added that if the hospitals in the central localities are abolished it will be necessary to retain or to build receiving houses for injured persons and for urgent cases which are brought every day in great numbers to these hospitals.

The Pasteur Institute.

In the Rue Dutot, immediately opposite the Pasteur Institute, building operations were commenced two years ago on the Biological Institute, a structure which corresponds architecturally to the Pasteur Institute, but extends much further back. This building, the cost of which came out of the 2,000,000 francs given to the Pasteur Institute by Baroness Hirsch three years ago, has been completed and only requires some finishing touches inside. It includes a spacious amphitheatre, numerous laboratories, and what is practically a hospital intended to serve as a clinical department for the Pasteur Institute. Baroness Hirsch, who had announced her intention of making bequests to scientific and hospital establishments, ultimately changed her mind, for her will, published a month ago, dealt with a sum of 315,000,000 francs, of which 200,000,000 francs were bequeathed to different philanthropic undertakings in France and abroad, all of them, however, being exclusively Jewish.—The measures necessary to resist plague are receiving careful attention at the Pasteur Institute. Dr. Salimbeni, *préparateur* to Dr. Roux, has been added to the commission sent to Oporto; I mentioned in my letter last week that Dr. Calmette is one of the members. The commissioners were accompanied to the railway station by all their friends at the Pasteur Institute, who went to see them off. The preparation of anti-plague serum is being rapidly proceeded with; up to the present time the institute has supplied it, in response to all the very numerous requests which have come from Portugal, Spain, Italy, and Turkey, without encroaching on the reserve kept in readiness for Paris and the departments. Although it was only a fortnight ago that the Government gave official permission to manufacture and sell this serum, the institute has been preparing it for the last four or five years, for it is a rule with the institute not to supply sera to the public until their value has been completely proved. Anti-tubercle serum, anti-cholera serum, and anti-typhoid serum have also been prepared and have yielded gratifying results, but their effect is not sufficiently constant to warrant their being distributed to the public. Anti-plague serum is of undoubted efficacy as a prophylactic, but its curative power is less certain.

Sept. 12th.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

The Prussian Minister of Education and the German Medical Faculties.

THE medical faculties of the universities of Germany, those of Prussia excepted, have published a very energetic declaration directed against the Prussian Minister of Education, Dr. Bosse. The new Bill relative to medical officers of health in Prussia contained a proviso that the candidate must have taken the degree of M.D. at a Prussian university, whereas up to the present time the M.D. degrees of all the universities of Germany have been on an equal footing. In the discussion in the Prussian Parliament Dr. Bosse stated that at some universities the examinations for the M.D. degree were a mere formality and that "dissertations" were accepted from the candidates without having been published in print, so that no judgment could be given as to their scientific value. The words of Dr. Bosse have caused a great sensation in the medical faculties outside Prussia and their deans have therefore published the above-mentioned declaration in the periodical press, both medical and non-medical. The article is signed by Professor Gerlach of Erlangen, Professor von Kries of Freiburg, Professor Vossius of Giessen, Professor Leber of Heidelberg, Professor Wagenmann of Jena, Professor His of Leipsic, Professor Bollinger of Munich, Professor Barfurth of Rostock, Professor Laqueur of Strasburg, Professor Froriep of Tübingen, and Professor Hofmeier of Würzburg, so that every German university not belonging to Prussia is represented. The deans declare that the opinion of the Minister is by no means founded on fact and that no difference in the method of examination exists between the universities in Prussia and in other States of the German Empire. They point out that the degree of M.D. is no longer granted except to men who have become qualified by passing the *Staats-examen*, and that some defects which existed in the examinations have been remedied long ago. The Bill containing the above clause has nevertheless become law. It has been asserted in the press that the Minister's prohibition of candidates from graduating outside Prussia was prompted not so much by the superiority of the Prussian M.D. degree as by his anxiety to preserve the somewhat high fees for medical faculties belonging to his own jurisdiction. There is a system of parsimony, not to say of meanness, in the education department of Prussia, especially in university matters, and the Minister will not have to apply to the Treasury when the universities get more money by the fees for examinations. A thorough reform of medical titles would be altogether desirable, and the title of M.D. should be given to every qualified man as is the case in Austria. Financial considerations, however, have hindered and will probably continue to hinder this reform.

Statistics of the Medical Profession.

The Statistical Office has just published returns relative to medical qualifications in Germany which show that 1314 candidates became qualified in 1898. Of this number 20 were foreigners, including eight Russians, four Swiss, three Dutchmen, two South Americans, one Englishman, one Mexican, and one African. The total duration of medical study varied considerably with different candidates: 936 studied for nine semesters, 158 for 10 semesters, and 211 for 11 semesters and upwards.

The Plague.

After the announcement of the outbreak of plague in Oporto the Federal Council issued an order by which the importation of clothing, furs, and some other articles from Portugal into Germany was prohibited. The authorities have not taken any extraordinary measures, the usual precautions in the German seaports being sufficient. No order has been given to keep ships in quarantine. The newspapers warn the public against taking alarm in the event of an outbreak of the disease, as the hygienic and sanitary conditions of Germany will probably hinder a spread of the epidemic. Some business men in Oporto have asked the German Government to send Professor Koch to that city, but as he has just left Italy for the Dutch East Indies to complete his study of malaria, Professor Trosch and Professor Kossel of the Institute for Infectious Diseases have gone to Portugal as German commissioners.

Work for Convalescents in Hospitals.

In the *Zeitschrift für Physikalische und Diätetische Therapie* Dr. Buttersack directs attention to the desirability of providing work for certain classes of hospital patients. Many patients, he says, are kept in hospital a considerable time as convalescents when they are recovering from such diseases as enteric fever or slight endocarditis, and they are able to do a certain amount of easy work although they are not yet capable of earning their livelihood. The great majority of hospital patients belonging to the working classes are accustomed to a regular occupation and feel uneasy when they have nothing to do. Hospital medical officers must have observed that many convalescents spontaneously try to help the nurses and ask to be allowed to employ themselves in this way, but as a rule there is no proper work for them. Dr. Buttersack therefore proposes that a system of work for convalescents should be organised under medical supervision. Special rooms and the necessary tools or appliances would have to be provided for that purpose. This work must of course be very easy and the

time given to it must be very short in order that there may be no over-exertion. The patients must not be under any obligation to work when they do not wish to do so and must be paid for their labour, so that they may take a sum of money with them when they leave the hospital. Dr. Buttersack is of opinion that for certain patients congenial occupation would be of the greatest advantage both mentally and physically.

Instruction in Cookery for Medical Men.

A well-known professor of medicine in Berlin used to say in his clinical lectures that a medical man ought to be at home not only in the laboratory but also in the kitchen—a dictum the truth of which is occasionally apparent when practitioners in prescribing diets for patients are embarrassed by questions relative to the method of cooking. The great majority of medical men are unable to give precise instructions to a cook, whilst, on the other hand, many unqualified practitioners impress the public mind by their careful directions as to the preparation of their patients' food. Some medical men, as, for instance, Professor Ewald in an article in the *Handbuch der Ernährungstherapie*, have referred to this fact and have expressed a wish that medical men had opportunities of learning the rudiments of cookery. The *Berliner Klinische Wochenschrift* now informs the medical profession that two ladies, superintendents of schools of cookery for girls, have arranged to give special courses for medical men. It is not said in the advertisement whether the medical pupils of these ladies will have to do practical work by grilling chops, cooking potatoes, or boiling vegetables, or whether they will only have to listen to the verbal explanations of their instructress. The offer of the ladies to open cookery classes for medical men will be heartily welcomed by those who think that medical training ought to be much more practical than has hitherto been the case.

Sept. 11th.

ROME.

(FROM OUR OWN CORRESPONDENT.)

The "Suicidal Contagion" and the Responsibility of the Press.

"A VERY good country to live out of," said the Irish emigrant of his native land. "A very good world to live out of," says an Italian nearly every day of the month. We are, indeed, passing through an epidemic of suicide. In Milan alone there were last July more than 15 cases of self-murder and nearly as many abortive ones. This, be it remarked, is reported from the most prosperous of Italian cities where work and wages are comparatively abundant. But what is to be said of the other centres where the want of both is conspicuous and the consequent destitution and "miseria" culminate in despair and "tædium vitæ"? Florence, notoriously dependent on the winter guest, feels the pinch of poverty so acutely in the long summer months that she has registered one suicide per diem, abortive or effective, between May 1st and July 31st.[1] Naples and Palermo have a similar tale to tell, to say nothing of Rome herself, where, let me add, the statistician cannot always keep pace with the suicide and where cases of self-murder escape even the lynx-eyed journalist, ever on the watch to gratify the public craving for "fatti di sangue" (deeds of blood). So appallingly frequent have such cases become—whether verified at the time or discovered weeks afterwards—that an animated correspondence has been in progress in the press as to the causes underlying the phenomenon. Hardness of living, as above stated, accounts for a large proportion of suicides, but is there not another factor to be adduced in explanation? "Seven and twopence being found in his pocket, there was no apparent motive for the rash act," concluded a newspaper paragraph in the old, ill-paid epoch of journalism. In the judgment of at least that reporter the "leit-motif" of self-murder is not always what Disraeli called the "ignoble melancholy which arises from pecuniary embarrassment." In THE LANCET of July 15th, 1899, p. 170, an annotation on "The Imitative Element in Crime" indicated a real and powerful incentive to "go and do likewise" on the part of weakly, impressionable, morbidly mimetic natures; and, again, in THE LANCET of March 25th, 1899, p. 851, "Crime and the Responsibility of the Press" formed the text of another annotation showing the quarter whence that incentive was all too abundantly supplied. "What Cato did and Addison approved [which Addison did not, by the way] cannot be wrong," said poor Budgell before taking his fatal "header" in the Thames; but there are countless others besides the Grub-street starveling who are instigated by precedents far less august than that of the Roman patrician. In Italy, according to a leading Milanese organ, the imitative instinct is so strong, particularly after deeds which, dramatically described, secure their authors "a nine days' immortality" in the coffee-house, that the press has a grave responsibility in reporting such deeds at all, however common-place or however void of "sensation." One suicide begets a dozen, it is said, and so it is recommended to withhold at least the details of each recurring suicide from the public and simply chronicle the fact. There is much to be said for this recommendation. Shorn of their dramatic features, as presented by the "graphic" reporter, the cases of self-murder will lose well-nigh all their interest or their power to "prompt," and so far the press would act wisely in playing the registrar merely, not the "sensation-monger." But unfortunately, as the *Corrière della Sera* well points out, the newspapers cannot withhold description of all such cases, especially those which are of supreme public interest. What journal, it asks, with a proper sense of its duty, could have suppressed information as to the suicide of King Louis of Bavaria, or of Prince Rudolf of Hapsburg, or of General Boulanger? And it is precisely such cases that appeal to the "weakly, impressionable, morbidly mimetic" vulgar when the self-asphyxiation of a starving labourer or the "fatal header" of a hopelessly impecunious mechanic scarce command a momentary interest. No; the true remedies for the "suicidal contagion" are to be sought deeper down than in the columns of the daily press. In Italy a wiser fiscal policy, the harbinger of better economic conditions, would make "hardness of living" as little of an incentive to self-murder as it is in England, while a sounder, more thorough, more "specially adapted" system of education would give a robuster constitution, physical and mental, to her young and cut at the root of that "weakly, impressionable, morbidly mimetic" development of which so much has, quite properly, been made. For, after all, such developments are, in Darwinian language, a "retrocession to the pithecoid"—a degeneration backward to a lower stage of evolution—and they must be treated by the methods of which the Sub-Alpine school has (with all its extravagance) made itself the laudable pioneer. The "mens sana" can co-exist only with the "corpus sanum"—a fact of which Chateaubriand had full cognisance when he said: "Les suicides sont toujours communs chez les peuples corrompus." Italy, it must be owned, with her 15,000,000 "analfabeti" (or nearly so), with her failure to exclude the hysterico-epileptic and what Lombroso calls the "criminaloid" from her public services, civil and military, has much leeway to make up before she can free herself from the stigma of registering a homicide every two hours and an effective suicide every second day. Let her do her duty by her offspring and rehabilitate her social organism till she has brought up her population to the moral strength and steadiness and the "esprit de corps" of a well-disciplined army. Then she will minimise her "crimes of blood." Then she will practically recognise the truth of what the great Napoleon said, in unconscious plagiarism from Socrates, "Tout soldat qui se tue, est un soldat qui desert."

Sept. 11th.

[1] Vide THE LANCET, August 14th, 1897, p. 421.

RUSSIA.

(FROM A CORRESPONDENT.)

The Outbreak of Plague on the Volga.

THE Russian papers are all but silent upon the epidemic which recently broke out in the village of Kolobovka, near Astrakhan, and which is generally supposed to have been plague. Official *communiqués*, without remark, are alone permitted to appear in the press. From these it may be gathered that the disease made its first appearance on July 23rd (new style); that it presented the characters of a severe form of pneumonia; and that from that date until

August 24th there had been 24 cases, of which 23 cases had proved fatal. The last new case occurred on August 21st and the last death on August 24th. That the outbreak, which, it may be hoped, is now at an end, was regarded by the Government as of considerable gravity is evident from the fact that His Highness the Prince of Oldenburg (who is president of the standing Russian Imperial Plague Commission) himself visited the scene of the epidemic. The Society of St. George, a society whose aims and methods are not unlike those of a Red Cross Society, recently announced that it also would despatch a number of sisters of mercy and medical men to the government of Astrakhan to aid in carrying out the necessary measures. The steps taken by the authorities are said to have at once been followed by a diminution in the number of cases, the epidemic beginning to slacken from August 14th, when the measures were put in force, and apparently becoming extinct a week later. The small outbreak appears to have become known to the authorities at a much earlier period than was the case with the more fatal outbreak of plague at Vetlianka (also on the Volga) in 1878 or with the similar one at Anzob, in Central Asia, last autumn. In each of those epidemics some hundreds of deaths had already occurred before the authorities could put in force any precautionary measures whatever. It is reassuring to recall that in spite of this fact the disease was confined in each instance to a single village or small group of villages. A St. Petersburg daily paper announces that Dr. Zabolotnui, who is well known in Russia as a pathologist and epidemiologist, has left Odessa for Mesopotamia "to study on the spot the *foyer* of plague there." This is the first and only reference I have as yet seen in the press, either English or Russian, to the existence at the present moment of plague in Mesopotamia. Perhaps some of your readers may be able to throw further light upon the subject from other sources. The Russian papers relate the following little anecdote in connexion with the outbreak of plague in Central Asia above referred to. The inhabitants of the neighbourhood were most loth to undergo inoculation with the plague prophylactic which the members of the Plague Commission who visited the spot took with them. Hearing this a sailor from one of the Imperial yachts, who was one of the guard which accompanied the commission, volunteered to be inoculated before the people in order—in hunting parlance—to give them a lead. The lead was apparently followed and the sailor has been rewarded for his zeal by the presentation of a gold medal and the ribbon of the Order of St. Stanislas.

Preparation of the Plague Prophylactic in Russia.

Up till quite recently the supply of plague prophylactic for Russian needs was prepared entirely in the Imperial Institute of Experimental Medicine in St. Petersburg. Since, however, the unfortunate events of last autumn in Vienna demonstrated clearly that the conduct of experiments with plague bacilli in laboratories in the midst of a large town was not entirely without risk, the Russian authorities have been making arrangements to remove their principal plague laboratories to a more isolated position. The site chosen could scarcely be bettered in this respect, for it is no less than a fort in the midst of the Gulf of Finland and entirely surrounded by water. Fort Alexander I., one of the chain of forts opposite the island of Cronstadt, has been entirely devoted to the purposes of the new laboratories, which on July 27th (August 8th) were formally opened in the presence of the Prince of Oldenburg and after a dedication service by the far-famed Father John of Cronstadt. From the published descriptions of the transformed fort everything would appear to have been done to make the new institution as perfect as possible. There are laboratories for infectious work and others for non-infectious work; there are stables for a large number of horses, whether healthy, inoculated with some infectious disease, or immunised. There are rooms or stalls for a large number of smaller animals; and there is dwelling accommodation, carefully separated from the infectious laboratories and stables, for the entire staff of medical men, grooms, servants, and others. There is even a small hospital provided in case any of the staff should fall sick. Stoves have been constructed for the burning of refuse and dead animals, and a special boiler has been provided for boiling all soiled water which leaves the laboratories or stables before it is allowed to escape into the sea. Much good work should be possible in the new institution and "Fort Alexander I." will, it may be hoped, prove as useful in the future in defending the country from the attacks of an unseen enemy as it ever was in the past against a larger but certainly not more deadly foe.

Scurvy and Famine.

The *Vratch* (No. 29) publishes from two authentic sources[1] some very terrible details of the suffering now being caused by the famine and epidemics of scurvy and typhus in Southern and Eastern Russia. In one village, in the Government of Simbirsk, the village hospital, constructed to hold a maximum of 30 patients, was found to contain no less than 117. But even this was exceeded when the epidemic was at its worst (from January to May); at that time 203 persons were somehow crammed within its walls. They lay in every possible spot, including the entrance portico and staircase. In the Kazan Government scurvy has been excessively rife and the suffering from cold and want of food extreme. In many villages the huts were roofless, the roofs (presumably thatched) having been torn down to feed the cattle. The peasants had passed the winter in *zemlianki*, or hovels dug in the earth and rudely roofed over, which they shared with such of their cattle as survived. Many persons died from scurvy and many others from sheer starvation. The scurvy presented itself either in its typical form with primary softening of the gums and subsequent minute hæmorrhages in various parts of the body, or in a form characterised by large hæmorrhages under the skin or into the muscles and accompanied by severe pains in the limbs and especially in the knee-joints, in consequence of which the patients were unable to walk for a considerable period. In one particular district (that of Sviaga) the disease began in most patients with hæmorrhages in the popliteal region, or (more rarely) in the neighbourhood of the ankle, and affection of the gums was a later symptom. In some 5 per cent. of the total number of patients the gums were entirely unaffected. In a few cases the hæmorrhages appeared at the bend of the elbow or at the wrist-joint. Ulcers were occasionally present. The majority of patients who suffered from scurvy were women, apparently because the lack of food fell more directly upon them than upon the men. In every instance the occurrence of scurvy was entirely due to lack of food and when the relief measures were put in force and food distributed scurvy diminished or disappeared completely. There was no evidence whatever that scurvy could become infectious. Children, it was observed, who were suckled by scorbutic mothers in no instance developed the disease.

General News.

The Veterinary Department of the Ministry of the Interior has decided to send two veterinary surgeons to Cape-town to study the preparation and mode of use of the vaccine employed in cattle plague.—The Russian Government is about to introduce into the Russian universities a system of common residences for the undergraduates and has set aside 3,262,000 roubles (equivalent to about £350,000) for the purpose.—Typhus fever has recently been prevalent in the Government of Kharkof. The *Medical Chronicle of the Kharkof Government* (July) contains an interesting article on the outbreak which is quoted in the *Vratch*. The popular objection to any form of isolation of the patients was so great that the measure simply could not be carried out. The author of the article (Dr. Grodzinski) obtained excellent results as regards treatment by the use of hot baths (up to 24° R.) with simultaneous application of cold to the head. Improvement in the patients' diet was of the greatest benefit. The diet taken by the peasants during the great Church fasts seemed to act unfavourably both as to the spread and as to the mortality of the disease.

Obituary.

WILLIAM McLAURIN, M.B., C.M. GLASG.

VERY wide regret is felt in Islington at the death of Dr. McLaurin. He was born in the Anderston district of Glasgow on March 14th, 1846, and was educated at the High School. He proceeded in due course to the University of Glasgow and graduated there M.B. and C.M. in 1867. The mere list of the offices which he filled before commencing practice in Barnsbury some 15 years ago is a proof at once of his capacity and of the large range of his experience. He was house surgeon to Greenock Hospital

[1] "The Son of the Fatherland" and the "Russkie Vïédomosti."

and Infirmary and to Paisley Infirmary and Dispensary. On coming to London he became assistant medical officer to the Metropolitan Asylums Board Fever Hospital, Stockwell. He was also assistant resident medical officer to the London Fever Hospital. After commencing practice and up to the time of his death he was surgeon to the Royal Maternity Charity, Finsbury-square. He was the author of several communications of interest which appeared in THE LANCET and which were as follows: Pleural and Diaphragmatic Tension (1879); Surgical Emphysema (1882); a new Axis Traction Midwifery Forceps with Sliding Blades (1886). He is said to have had the largest practice in the neighbourhood. He was equally respected by the public and by his professional brethren who often consulted him in cases of difficulty. He had a considerable surgical faculty and was a man of more than ordinary ability in the whole range of medical work. Added to this, and giving virtue to it all, was his character as a Christian gentleman who found time in his engrossing life to aid all good causes. By the poor he will be greatly missed. We are indebted to the vicar of St. Thomas's, of whose church he was a devoted member for the following remarks. "Kind, gentle, painstaking, a perfect gentleman, bestowing the most ungrudging care on behalf of the poorest of his patients, he was a true and loyal friend, a devoted husband and affectionate father. He was loved and respected while living, and has left behind him that best legacy, the record of a good, honourable, and useful life." He was buried at Finchley Cemetery and the attendance at the preliminary service at St. Thomas's Church, in the streets, and at the grave was a striking proof of the respect in which he was held. He leaves a widow and two sons and two daughters.

JOHN BARLOW STUART, M.R.C.S. ENG., L.R.C.P., F.R.G.S. EDIN.

BY the death of Mr. J. B. Stuart, which occurred on August 29th, one of the most prominent medical men of Wigan has passed away. Mr. Stuart was only 48 years of age, but his health had never been of a very robust character, and it was owing to a recurrence of an attack of hæmorrhage that he died at about six o'clock on the morning of August 29th, in spite of all efforts on the part of his medical advisers. Death took place at Shevington Hall, to which house he went after 12 months in Llandudno, his previous residence being Mere Oaks, Boar's Head. Mr. Stuart had a successful professional career. He commenced his medical education by being a pupil of the late Dr. William Roocroft of King-street. He became M.R.C.S. Eng. in 1873 and in 1878 L.R.C.P. and L.M. of Edinburgh, while in 1880 he became a Fellow of the Royal College of Surgeons of Edinburgh. In the year 1873 he commenced practice in Wigan. From the *Wigan Times*, to which we are indebted for some of the above particulars, we learn that Mr. Stuart was surgical referee to the Lancashire and Cheshire Miners' Permanent Relief Society and had been the medical officer of the Colliery Owners' Indemnity Society since its formation which dates from the passing of the Workmen's Compensation Act. An able lecturer on medical subjects, he was also the author of several instructive manuals on the treatment of young children. Mr. Stuart did not actively identify himself with politics, though hopes had been entertained from time to time that he would appear as a representative in the town council, but professional ties and probably a disinclination for party strife compelled him to refuse all overtures. Mr. Stuart married the daughter of the late Mr. William Crompton, J.P., of the then firm of Crompton and Shawcross, and he leaves a widow, a son, and two daughters. He had had conferred upon him in 1891 the well-deserved position of borough magistrate and in 1893 was elevated to the county bench.

CONVICTION UNDER THE SALE OF FOOD AND DRUGS ACT.—At the Market Harborough (Leicestershire) Petty Sessions, on Tuesday, Elizabeth Fox, grocer of that place, was fined £3, including costs, for selling seidlitz powders not of the quality and substance demanded. The analyst's certificate showed that the sample contained only nine grains of sodium potassium instead of 120, and only 40 grains of sodium bicarbonate instead of 127. For the defence it was stated that the defendant sold the powders just as she herself purchased them, but the name of the firm was not given.

Medical News.

UNIVERSITY OF DURHAM.—At the first examination for the degree of Bachelor in Medicine held at the College of Medicine, Newcastle-upon-Tyne, in September, the following candidates satisfied the examiners:—

OLD REGULATIONS.

1. *Chemistry with Chemical Physics.*—Ernest George Annis, M.R.C.S., L.R.C.P., D.P.H., St. Mary's Hospital; Alfred James Bulger, M.R.C.S., L.R.C.P., Mason College, Birmingham; Philip Gell Garrett, M.R.C.S., L.R.C.P., Middlesex Hospital; and Ernest James Miller, Middlesex Hospital and Cooke's School of Anatomy.

NEW REGULATIONS.

1. *Elementary Anatomy and Biology, Chemistry, and Physics.*—Arthur Gibson Dunn, College of Medicine, Newcastle-upon-Tyne (First-class Honours); William Henry Peacock, College of Medicine, Newcastle-upon-Tyne (Second-class Honours); John Frederick Bridge, Mason College, Birmingham; John Wilfrid Caton, Guy's Hospital; Edgar Fletcher Edmunds, University College, Sheffield; Evelyn John Evatt, Royal College of Surgeons in Ireland; Daniel Richard Guns, College of Medicine, Newcastle-upon-Tyne; Francis Jollie Gowans, College of Medicine, Newcastle-upon-Tyne; George Brittan Gill, University College, Bristol; William George Thomas Hepplewhite, College of Medicine, Newcastle-upon-Tyne; William Hughes, Edinburgh School of Medicine; John Thomas McKay, College of Medicine, Newcastle-upon-Tyne; and Joseph Collingwood Stewart College of Medicine, Newcastle-upon-Tyne.
2. *Chemistry and Physics.*—Frederick George Armstrong, College of Medicine, Newcastle-upon-Tyne; Walter Donald Carruthers, Mason College, Birmingham; Wilfred Ralph Leycester Drawbridge, St. Bartholomew's Hospital; Margaret Douglas French, London School of Medicine for Women; Arthur Henry Fullerton, College of Medicine, Newcastle-upon-Tyne; Bryden Glendinning, Guy's Hospital; William Edward Hopkins, University College, Liverpool; Charles Robert Lease, College of Medicine, Newcastle-upon-Tyne; George Edward Victor Morris, Mason College, Birmingham; Flora Murray, London School of Medicine for Women; Christie Mûthûswamy-Anthony, Guy's Hospital; Harry Carille Sturdy, M.R.C.S., L.R.C.P., Guy's Hospital; Gayton Warwick Smith, Guy's Hospital; Herbert Hoyle Whaite, Mason College, Birmingham; Auburn Lawrence Wilkinson, College of Medicine, Newcastle-upon-Tyne; and John Robert Wylie, College of Medicine, Newcastle-upon-Tyne.
3. *Elementary Anatomy and Biology.*—Ambrose Harold Bateman, St. Bartholomew's Hospital; Harold Linton Currie, College of Medicine, Newcastle-upon-Tyne; William Watkiss Jones, Mason College, Birmingham; Sidney Nix, St. Mary's Hospital; Leslie Martin Rosten, St. Bartholomew's Hospital; and John Malcolm Shaw, College of Medicine, Newcastle-upon-Tyne.

UNIVERSITY OF EDINBURGH: COURSES ON PHYSIOLOGY.—In addition to the five months' course on physiology the following courses on practical physiology will be given during the next *annus academicus*. Winter session, 1899-1900: 1. Practical Experimental Physiology. Every week-day except Saturday from the middle of October to the end of January, from 10 A.M. to 12 noon. Fee, £2 2*s*. Each student to attend on one day in the week only. 2. Practical Chemical Physiology. Every week-day except Saturdays from the middle of October to the end of January, from 10 to 11 A.M. Fee £1 1*s*. Each student to attend on one day in the week only. Summer session, 1900: Practical Histology. Each student to attend for two hours on four days a week from the beginning of May. Fee £2 2*s*.

THE recent fête organised on behalf of the Dawlish Hospital has resulted in a sum of £236 being handed over to that institution.

SEWAGE DISPOSAL AT TAUNTON.—At a special meeting of the Taunton Town Council, held on Sept. 7th, it was decided to adopt the septic tank system of sewage disposal. The cost was estimated at about £22,000.

RECOGNITION OF MEDICAL SERVICES. — Mr. James G. Beasley, L.R.C.P. Edin., L.F.P.S. Glasg., medical officer of health, Rowley-Regis, has been granted £21 by the Rowley Parish Council for services rendered during the epidemic of enteric fever at the Twidale Hospital.

TYPHOID FEVER AT FALMOUTH.—At the meeting of the Falmouth Corporation, held on Sept. 7th, the medical officer of health (Dr. Bullmore) reported that 90 cases of typhoid fever had occurred from Jan. 1st until Sept. 7th, and that at present from 35 to 40 cases were being treated. Ten deaths were certified from the disease.

DRAINAGE OF BRISTOL.—At the meeting of the Bristol Sanitary Committee held on Sept. 7th it was decided to spend £24,000 upon a drainage scheme for Bedminster South, Knowle, and Brislington, populous residential districts of Bristol which have recently come within the civic jurisdiction of that city.

THE friendly societies of Barnstaple have recently collected over £200 for the local infirmary and dispensary.

UNIVERSITY COLLEGE, BRISTOL.—The session of this College will commence on Oct. 3rd and an address on the Need for More Organisation of Our Higher Education will be delivered by Mr. Henry Hobhouse, M.P., on Oct. 12th.

RABIES IN SOUTH WALES.—In consequence of the outbreak of rabies in South Wales an order has been issued by the Board of Agriculture enjoining the muzzling of dogs in Glamorganshire, the eastern half of Carmarthenshire, and the southern half of Breconshire.

BRISTOL CONVALESCENT HOME.—The Bristol Diamond Jubilee Convalescent Home will be opened by the Queen on Nov. 17th or 18th. A sum of £7000 has still to be raised to complete the £100,000 required, and it is hoped that this will be forthcoming before the opening.

INFECTIOUS HOSPITAL FOR LLANELLY.—At the meeting of the Llanelly Borough Council held on Sept. 4th the chairman referred to the necessity for making some provision for the treatment of infectious diseases that might arise on board ship when in dock, and it was eventually decided to ask the surveyor to report upon the available sites for the erection of an isolation hospital.

BOOKS, ETC., RECEIVED.

ADLARD AND SON, Bartholomew-close, London.
King's College Hospital Reports. Edited by N. Tirard, M.D., F.R.C.P., and Others. Vol. V. (October 1st, 1897—Sept. 30th, 1898). Price 15s.

BARKER, GEORGE, Furnival-street, Holborn, London.
A Handbook with Hints for the Nursery. By J. M. Carvell, M.R.C.S. 1899. Price 1s.

BEMROSE AND SONS, London and Derby.
The Teaching of Language during the Early Period of a Deaf Child's School Life. By Mrs. Lydia Roe. 1899. Price 1s. 6d.

BLAKISTON'S SON AND CO., Walnut-street, Philadelphia.
Examination of Water for Sanitary and Technical Purposes. By H. Leffman, A.M., M.D., Ph.D. Fourth Edition. Illustrated. 1899.

BOULT AND WADE, Hatton-garden, London.
The Mechanics of Surgery. By Charles Truax, Chicago, U.S.A.

CASSELL AND CO., London.
Orthopædic Surgery: A Text-book of the Pathology and Treatment of Deformities. By J. J. Clarke, M.B. Lond., F.R.C.S. Illustrated. 1899. Price 21s.

CHURCHILL, J. & A., Great Marlborough-street, London.
Ringworm and Some Other Skin Affections: Their Cause and Cure. By Haydn Brown, L.R.C.P. Edin. 1899. Price 5s.
The Schott Methods of the Treatment of Chronic Diseases of the Heart. By W. B. Thorne, M.D., M.R.C.P. Third Edition. 1899. Price 6s.

DUCKWORTH AND CO., Henrietta-street, London, W.C.
Faith-healing and "Christian Science." By Alice Fielding. 1899. Price 3s. 6d. net.

FANNIN AND CO., Grafton-street, Dublin.
Notes on the Feeding of Infants. By W. L. Symes, F.R.C.P. Irel. 1899.

GAY AND BIRD, Bedford-street, London.
Deluscar's Merris and other Poems. By Horace Deluscar. 1899. Price 3s. 6d.

GLAISHER, H. J., Wigmore-street, Cavendish-square, London.
Asthma: Recent Developments in its Treatment. By Ernest Kingscote, M.B., L.R.C.S. Edin. Illustrated. 1899. Price 5s. net.
Constipation and its Modern Treatment. By George Herschell, M.D. Lond. Second edition. 1899. Price 2s. 6d. net.

JARROLD AND SON, Warwick-lane, London.
A Son of Rimmon: a Novel. By Athol Forbes.

LONGMANS, GREEN, AND CO., Paternoster-row, London.
A Practical Introduction to the Study of Botany: Flowering Plants. By J. Bretland Farmer, M.A. Illustrated. 1899. Price 2s. 6d.

MENZIES, JOHN, AND CO., Edinburgh.
The Principles and Practice of Veterinary Surgery. By W. Williams, F.R.C.V.S. Ninth Edition. 1899.

REBMAN PUBLISHING COMPANY, Shaftesbury-avenue, Cambridge-circus, London, W.C.
Archives of the Roentgen Ray (formerly Archives of Skiagraphy). Edited by T. Moore, F.R.C.S., and E. Payne, M.A. Cantab. May and August, 1899. Price 4s. net each.

SCIENTIFIC PRESS, Southampton-street, Strand, London.
Nursing: its Theory and Practice. By P. G. Lewis, M.D., M.R.C.S. Thirteenth thousand. 1899. Price 3s. 6d.
A Handbook for Nurses. By J. K. Watson, M.D. Edin. 1899. Price 5s.
Burdett's Hospitals and Charities, 1899. By Sir Henry Burdett, K.C.B. Price 5s.

SOCIÉTÉ D'ÉDITIONS SCIENTIFIQUES, Paris.
Cure Prompte et Radicale de la Syphilis. Par Dr. J. F. Larrieu. Troisième edition. 1899. Prix 4 fr.
L'Audition Colorée. Par Dr. F. S. de Mendoza. Deuxième edition. 1899. Prix 7 fr. 50 c.
Nouveau Formulaire Magistral de Consultations Infantiles. Par Dr. H. Dauchez. 1899. Prix 4 fr.

UNIVERSITY PRESS, London.
The Universal Illusion of Free Will and Criminal Responsibility. By A. Hamon. 1899. Price 3s. 6d.

WOHLLEBEN, TH., Great Russell-street, London.
Test Cards for the Diagnosis of Colour Blindness. By Dr. W. A. Nagel. Translated by A. Bruer, M.D., M.R.C.S., L.R.C.P. Price 2s. 6d. net.

WREDEN, F., Braunschweig.
Lehrbuch der Kinderkrankheiten für aerzte und studirende. Von Dr. A. Baginsky. Parts I. and II. 1899.

Magazines, &c., for September: Strand Magazine, Boy's Own Paper, Girl's Own Paper, Leisure Hour, Sunday at Home, Ludgate Magazine, Westminster Review, Contemporary Review, Friendly Greetings, Myra's Journal, Pall Mall Magazine, Windsor Magazine, Cornhill Magazine, Blackwood's Magazine, English Illustrated Magazine, Knowledge, Humanitarian, St. Peter's Magazine, Wide World Magazine, New Century Review.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward it to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, for publication in the next number.

ALTMANN, C. A., M.B., Ch.B. Melb., F.R.C.S. Edin., has been appointed Medical Officer of Health for Bright Shire, Victoria, Australia, vice C. A. Macquarie, resigned.

BELLI, R., M.D., Ch.D. Univ. Siena, Italy, has been appointed Medical Officer to the Hospital, Walgett, New South Wales.

CLARKE, H. W., M.D. Brux., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer for the No. 1 Relief District by the Kensington Board of Guardians.

DUKE, A. S., L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been re-appointed Medical Officer and Public Vaccinator for the Milland Sanitary District of the Midhurst Union.

ELMES, T. FRANCIS, L.R.C.S., L.R.C.P. Edin., L.F.P.S. Glasg., has been appointed Resident Medical Officer to the St. Pancras Hospital and Dispensary, Euston-road, London, N.W.

ENSOR, E. T., M.D. Univ. N.Y., L.R.C.P. Irel., L.F.P.S. Glasg., has been appointed Medical Officer for the Workhouse for Able-bodied Men and for the Casual Wards by the Kensington Board of Guardians.

FARRAR, R. A., M.D. Oxon., L.R.C.P. Lond., M.R.C.S., D.P.H. Cantab., has been appointed under the Indian Government to take up Plague Duty.

FINLAY, WILLIAM, M.D. San Francisco, L.R.C.P., L.R.C.S. Edin., has been appointed Public Vaccinator at Richmond, Victoria, Australia, vice C. B. Duigan, resigned.

GAMBLE, M. F. H., L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed, *pro tem.*, Acting Medical Superintendent for the Sunbury Lunatic Asylum, Victoria, Australia.

HARDING, CHAS. H., L.R.C.P. Lond., M.R.C.S., has been re-appointed Medical Officer of Health by the Whittlesea Urban District Council.

HAYDON, L. G., M.B., M.S. Aberd., has been appointed, *pro tem.*, Acting Officer of Health for Minhamite Shire, Victoria, Australia.

HOPE, S. W., L.R.C.P. Lond., M.R.C.S., has been re-appointed Medical Officer for the Tillington Sanitary District of the Midhurst Union.

LAMPLOUGH, CHAS., M.D. Brux., L.R.C.P. Lond., M.R.C.S., has been re-appointed Medical Officer of Health by the Chatteris Urban District Council.

LOBY, ARTHUR GEORGE BATEMAN, L.S.A. Lond., has been appointed Medical Officer and Public Vaccinator for the Chudleigh District of the Newton Abbot Union, vice H. H. Lloyd Patch, resigned.

MORRIS, B. H., M.B., B.S. Durh., has been appointed Medical Officer to the Destitute Poor and State Children Departments of South Australia, vice W. T. Clindening.

MUIR, W. C. C., M.B., Ch.M. Glasg., has been appointed Public Vaccinator at Alberton, Victoria, Australia.

OSMEROD, E. W., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer for the Southam Workhouse and the Southam Sanitary District of the Union, vice W. Lattey.

PARK, J. S., L.R.C.P. Lond., has been appointed Medical Officer of Health for Cranbourne Shire, Victoria, Australia, vice M. B. Thomson, resigned.

PATTERSON, J. H., M.B., C.M. Edin., has been appointed Medical Officer of Health and Public Vaccinator for Traralgon Shire, Victoria, Australia, and also Medical Officer of Health and Public Vaccinator for Toongabbie Riding, Rosedale Shire, Victoria, Australia.

PECK, HERBERT, M.D., D.P.H., has been re-appointed Medical Officer of Health for the Chesterfield Rural District.

PEIPERS, F., M.D. Berl., has been appointed Medical Officer of Health for Wodonga Shire, Victoria, Australia, vice R. H. Schlink, resigned.

ROMMEIS, EDWARD, M.D. Gotha, has been appointed Medical Officer of Health for North Fremantle, West Australia.

SPROTT, GREGORY, M.B., Ch.M. Glasg., has been appointed Medical Officer of Health for the District of Beltana, Tasmania; and also Police Surgeon for the Districts of Hobart, New Town, and Queenborough, Tasmania.

STEWART, C. P., M.R., M.S., B.Sc. Edin., has been appointed Medical Officer of Health and Police Surgeon for Perth.

TUXFORD, A., M.D. Edin., has been re-appointed Medical Officer of Health for the Borough of Boston, Lincolnshire.

VANCE, W. B., M.B. Melb., Ch.B., D.P.H. Cantab., has been appointed, *pro tem.*, Acting Public Vaccinator at South Melbourne, Victoria, Australia.

WARD, JOHN, M.D. St. And., M.R.C.S., has been appointed Public Vaccinator for the Nokomai and Switzers District, New Zealand.

WILSON, A. GARRICK, B.A., M.B. Cantab., M.R.C.S., L.R.C.P. Lond., has been appointed House Surgeon to the St. Mary's Hospital, London, W.

WILSON, T., M.R.C.S., L.S.A., has been appointed Resident Medical Officer for the Katanning District and Public Vaccinator for the Urban, Suburban, and Rural Districts of Katanning, West Australia, vice E. Spencer, resigned.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BARNWOOD HOUSE HOSPITAL FOR THE INSANE, Gloucester.—Junior Assistant Medical Officer. Salary £120 per annum, with board, &c., rising to £140 per annum.

BIRMINGHAM AND MIDLAND SKIN AND URINARY HOSPITAL.—Acting Surgeon.

CAMBRIDGESHIRE, &c., LUNATIC ASYLUM, Fulbourn, near Cambridge.—Assistant Medical Officer. Salary £140 per annum, with board, lodgings, and attendance in the Asylum.—Apply to the Clerk to the Visitors, Cambridge.

CHELSEA HOSPITAL FOR WOMEN, Fulham-road, S.W.—Clinical Assistant, tenable for three months. Fee £8 8s. Also Qualified Dispenser (female). Salary £60 per annum.

COUNTY ASYLUM, Prestwich, Manchester.—Assistant Medical Officer, unmarried. Salary commences at £125, increasing by yearly instalments of £25 to £250, with board, apartments, washing, &c.

CUMBERLAND AND WESTMORLAND ASYLUM, Garlands, Carlisle.—Junior Assistant Medical Officer, unmarried. Salary £100 a year, with board and residence.

DEVON COUNTY ASYLUM, Exminster.—Two Assistant Medical Officers. Salary of the first, £120 per annum, increasing annually by £10 to £150, and the salary of the second £100, rising as above to £130, with, in both cases, board, lodging, and washing.

DURHAM COUNTY ASYLUM, Winterton, Ferryhill.—Assistant Medical Officer, unmarried. Salary £140, rising by yearly increments to £160, with board, lodging, washing, and attendance.

FRENCH HOSPITAL AND DISPENSARY, 172, Shaftesbury-avenue, London.—Resident Medical Officer, unmarried, speaking French. Salary £80 per annum, with full board.

GLASGOW EYE INFIRMARY.—Resident Assistant House Surgeon. Salary £50, with apartments and board.

GOVAN DISTRICT ASYLUM, Crookston, near Paisley.—Junior Assistant Medical Officer. Salary commencing at £100 a year, with rooms, board, attendance, and laundry.

GREAT YARMOUTH HOSPITAL.—House Surgeon. Salary £90 per annum, with board, lodging, and washing, and £10 extra for elementary lectures to probationer nurses.

HUDDERSFIELD INFIRMARY.—A Senior House Surgeon and a Junior House Surgeon. Salaries £80 and £60 per annum respectively, with board, lodging, and washing.

INDIA OFFICE, Whitehall, London.—Medical men who are willing to engage for plague duty in India for a period of nine months. Apply to the Secretary, Revenue Department, India Office, Whitehall.

MANCHESTER CLINICAL HOSPITAL FOR WOMEN AND CHILDREN, Parkplace, Cheetham-hill-road.—House Surgeon. Salary £80 per annum, with apartments and board.—Apply to the Secretary, 38, Barton Arcade, Manchester.

MANCHESTER HOSPITAL FOR CONSUMPTION AND DISEASES OF THE THROAT AND CHEST.—Resident Medical Officer for the in-patient department, Bowdon, Cheshire. Salary £60 per annum, with board, apartments, and washing.

MANCHESTER ROYAL EYE HOSPITAL.—Junior House Surgeon. Salary £70 per annum, with residence, board, and washing.

NEW HOSPITAL FOR WOMEN, 144, Euston-road, London.—Three qualified medical women as Clinical Assistants for the Out-patient Department for one year. Also qualified medical woman as Assistant Pathologist for one year.

NORTH STAFFORDSHIRE INFIRMARY AND EYE HOSPITAL, Hartshill, Stoke-upon-Trent.—Assistant House Surgeon, board, apartments, and washing provided. Also House Surgeon. Salary £120 per annum, increasing by £10 per annum, conditionally, with furnished apartments, board, and washing.

OWENS COLLEGE, Manchester.—Junior Demonstrator in Physiology. Salary £100 per annum, rising to £150.

ROYAL DEVON AND EXETER HOSPITAL, Exeter.—Junior Assistant House Surgeon, for six months. Board, lodging, and washing provided.

ROYAL HALIFAX INFIRMARY.—Assistant House Surgeon, unmarried. Salary £50 per annum, with an extra allowance of £9 2s. 6d. per annum, and residence, board, and washing.

ROYAL SOUTH HANTS INFIRMARY, Southampton.—House Surgeon. Salary £100 per annum, with rooms, board, and washing.

SALISBURY INFIRMARY.—Assistant House Surgeon. Salary £30 per annum, with board, lodging, and washing.

SALOP INFIRMARY, Shrewsbury.—Assistant House Surgeon for six months. Salary at the rate of £40 per annum.

ST. ANDREW'S HOSPITAL FOR MENTAL DISEASES, Northampton.—Junior Assistant Medical Officer, unmarried. Salary to commence at £150, increasing £25 per annum to £200.

ST. MARY'S CHILDREN'S HOSPITAL, Plaistow, E.—Assistant Resident Medical Officer for six months. Salary at the rate of £50 per annum, with board, lodging, and washing.

STOKE-UPON-TRENT UNION.—Resident Medical Officer for the Workhouse. Salary £100 for the first year, £110 for the second year, and £120 for the third year, with board, washing, and furnished apartments at the hospital; subject to statutory deductions. Apply to the Clerk to the Guardians, Union Offices, Stoke-upon-Trent.

TAUNTON AND SOMERSET HOSPITAL, Taunton.—Assistant House Surgeon for six months. Honorarium £10 10s., with board, washing, and lodging in the hospital.

VICTORIA HOSPITAL FOR CONSUMPTION, Edinburgh, Out-patient Department.—Non-resident Clinical Assistant for six months. Salary at the rate of £60 per annum.

WESTMINSTER GENERAL DISPENSARY, 9, Gerrard-street, Soho.—Third Honorary Surgeon.

WEST RIDING ASYLUM, Menston, near Leeds.—Fourth Assistant Medical Officer. Salary to commence at £100, rising £10 annually to £150, with board and apartments.

WHITEHAVEN AND WEST CUMBERLAND INFIRMARY, Whitehaven.—House Surgeon. Salary £120 per year, and £30 annually for dispensing, with furnished apartments and attendance.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL, Wolverhampton.—Assistant House Physician for six months. Honorarium at the rate of £50 per annum given, and board, lodging, and washing provided.

WORKSOP, Notts.—Medical Officer at Worksop Dispensary, unmarried. Salary £120 per annum, with house, coals, gas, and attendance.

YORK COUNTY HOSPITAL.—Resident Assistant House Surgeon. Salary £60 per annum, with board, attendance, and washing.

Births, Marriages, and Deaths.

BIRTHS.

BELL.—On Sept. 5th, at Winckley-square, Preston, the wife of F. Bell, M.R.C.S., L.R.C.P., of a daughter.

CLARKE.—On Sept. 2nd, at Foregate-street, Worcester, the wife of Fielding Clarke, M.R.C.S., L.R.C.P. Lond., of a son.

ECCLES.—On Sept. 7th, at 63, Sackville-road, Hove, the wife of G. Tolcher Eccles, M.A., M.B. Cantab., of a son.

HERBERT.—On Sept. 7th, at 49, Ullet-road, Sefton Park, Liverpool, the wife of William Herbert, M.R.C.S., L.R.C.P., of a son.

MARRIAGES.

BELFRAGE—POWLEY.—On Sept. 7th, at St. Mary's Church, Purley, near Reading, by the Rev. Robert Powley, cousin of the bride, assisted by the Rev. Arthur Thomas Powley, Sydney Henning Belfrage, M.B., of 2, Montagu-place, W., son of James T. Belfrage of Putney, to Frances Grace, daughter of the Rev. Canon Powley, rector of Purley. Australian and New Zealand papers please copy.

DOBIE—MORRELL.—On Sept. 8th, at All Souls', Belvedere, by the Rev. F. N. Eden, M.A., vicar, assisted by the Rev. P. F. A. Morrell, B.A., brother of the bride, William Henry Dobie, M.B., C.M. Edin., M.R.C.S., son of William Murray Dobie, M.D., of Chester, to Alice Fanny, younger daughter of Commander George Trueman Morrell, R.N., retired, of Belvedere, Kent.

HAMILTON—CLARK.—On Sept. 6th, at Christ Church, Linnet-lane, Liverpool, by the Rev. Henry Boyden, assisted by the Rev. Canon Irving, George Gibson Hamilton, F.R.C.S., of 34, Rodney-street and 19, Sandon-street, to Mabel Elaine, elder daughter of Walter C. Clark, Esq., of Orleans House, Sefton Park.

HASLUCK—HUNT.—On Sept. 5th, at St. George's, Douglas, Isle of Man, by the Rev. William Fisher, brother-in-law of the bride, assisted by the vicar and Rev. Edward Hasluck, uncle of bridegroom, Dr. Edward Percy of Four Oaks, Warwickshire, third son of Frederick Hasluck, Esq., Edgbaston, to Margaret J. S. Hunt, second daughter of Mrs. Hunt of Eaglehurst, Douglas.

NEWTON—ADAMS.—On Sept. 7th, at St. Stephen's, South Dulwich, by the Rev. F. E. White, M.A., vicar, assisted by the Rev. G. Searle, M.A., curate of Feltham, Herbert William Newton, M.R.C.S., L.R.C.P., eldest son of the late W. A. Newton, M.A., chaplain of the Middlesex Industrial Schools, Feltham, to Florence Beatrice, youngest daughter of Frederic Emilius Adams, of West Dulwich, and granddaughter of the late Captain Cobb, R.N., of New Romney, Kent.

SCRASE—CHANDLER.—On Sept. 7th, at Westbury-on-Trym, Gloucestershire, by the Rev. Henry Jones, vicar of Barton Hill, assisted by the Rev. F. H. Pickford, Frank Edward Scrase, F.R.C.S., to Lucy Ann, elder daughter of John Chandler, Redlands, Bristol.

DEATHS.

EZARD.—On Sept. 10th, Mary Helen Ezard, wife of Edward H. Ezard, M.D., D.Sc., and daughter of John Glegg, Milliken, Renfrewshire, entered into her rest, aged 37 years. R.I.P.

IRELAND.—On Sept. 11th, at Mavisbush House, Polton, Midlothian, Margaret, the wife of William W. Ireland, M.D.

KEY.—On June 11th, at Ramsgate, Augustus Cooper Key, M.D., of Wilton-place, Belgrave-square, aged 61.

TAYLOR.—On Sept. 8th, Alfred Augustus Taylor, M.R.C.S., L.S.A., of Newlyn, Kingston-hill.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE VERY LATEST.

MRS. EDDY and other "Christian Scientists" will have to take a back seat owing to the advent of one Paul Edwards. According to the *Daily Mail*, who has interviewed this wonder-worker, Mr. Paul Edwards wishes people to understand "that I am not a faith-healer, neither am I charged with electricity nor mechanism. I get there by will-power, or mental concentration, if you like to call it so. My treatment is simple and it rarely fails. Some healers affect to believe that disease and pain do not exist. I know they exist and I get right on to the seat of the trouble at once. Say a man or a woman comes to me with rheumatism, or neuralgia, or epilepsy, or consumption. Well, I just fix my mind on the seat of the disorder and by a mental effort I rid them of pain in a very few minutes. Contact I don't need. I can cure a patient of pain in the stomach at four yards' distance and I'll abolish the worst case of insomnia in three visits of five minutes' duration each." We remember reading, we think in a book written by a countryman of Mr. Edwards, of a boyish hero who "could snuff a candle with his fingers at forty paces," but possibly Mr. Edwards's feat *re* the stomach is even more remarkable. Finally, we are pleased to see that faith is a *quantité négligeable*. "A man might think about any old thing while under treatment and be cured all the same."

A QUERY AS TO COMMENCING PRACTICE.

To the Editors of THE LANCET.

SIRS,—I should be very glad to receive the benefit of your opinion in the following case if you deem it to be of sufficient interest to medical men, and especially to those doing "locum" work. I have no objection to your publishing this communication in full. To explain the state of affairs. I have recently done "locum" work for three medical men in a town where there are seven practitioners. During my stay in the place it has become evident to me that there is an opening for another medical man. I have written to the three medical men pointing this out and asking whether they had any objection to my commencing practice there. They are the three oldest and longest established men in the town. Two of them write objecting, the third assents "with pleasure ..... as there is evidently an opening." I may say that the three are most friendly so that your opinion will be most interesting to us all. I should like to ask: (1) would there be anything ethically bad in my commencing practice there; and (2) if the reply to the first question be in the affirmative would the same reply hold good if I purchase the practice of one of the other four medical men and so commence practice?

I am, Sirs, yours faithfully,

Sept. 11th, 1899. LOCUM.

P.S.—Perhaps I ought to say that the opening which suggests itself is quite apart from the practices of the three medical men concerned, though, of course, these might possibly be encroached on.

*** It would require much argument to show that for a gentleman to begin practice in a town where he had recently been acting as locumtenent for three out of seven medical men was not a breach of that unwritten law which equals in strength any written contract. Two out of three of the principals have naturally objected. Our opinion is that our correspondent should dismiss the idea as decidedly objectionable on ethical grounds. Nor would it be much less objectionable for "Locum" to buy the practice of one of the other four medical men. The lapse of time and the consent of the three gentlemen whom he has served might make a difference.—ED. L.

"GYNÆCOLOGICAL METHODS."

To the Editors of THE LANCET.

SIRS,—I am much obliged for the information you have been kind enough to give in THE LANCET of Sept. 9th in your reply to my letter of inquiry of August 26th. With regard to that part of your reply relating to laparotomy for direct compression of the uterus for post-partum hæmorrhage may I be permitted to refer to the case published in THE LANCET of Feb. 11th, 1899, "On the Treatment of Unavoidable Hæmorrhage by removal of the Uterus," by Mr. Lawson Tait? In that case Tait-Porro's operation was performed after the patient had been bleeding with alarming profusion for five hours. The success obtained after so severe an operation seems to indicate that a simple laparotomy for post-partum hæmorrhage might not be so likely to induce fatal shock. If you consider this conclusion erroneous I shall be glad to know why you think it is so.

I am, Sirs, yours faithfully,

Sept. 11th, 1899. L. G.

*** We are aware that both Porro's operation and Cæsarean section have been recommended and practised for the treatment of accidental and unavoidable ante-partum hæmorrhage. This practice has received, as our correspondent points out, the endorsement of such an authority as the late Mr. Lawson Tait, but in spite of this this method of treating such cases is not one which we can recommend. In a severe case of post-partum hæmorrhage, as we have allowed, opening the abdomen to directly compress the uterus would no doubt be quite possible and feasible. Any operation, however, which involves opening the abdomen is attended by so much more shock than one performed through the vagina that in a severe case of hæmorrhage from the uterus after delivery we should much prefer plugging the uterine cavity with gauze to opening the abdomen with a view to directly compressing it. It is obviously a question upon which there may be a legitimate difference of opinion, but for our part we do not regard our correspondent's suggestion with favour.—ED. L.

A CASE FOR ASSISTANCE.

WE have received the following letter from the wife of a medical man. If any of our readers can tell us of a home where our unfortunate professional brother could be received they would be helping a very sad case. The patient is 49 years of age and though mentally feeble can do everything for himself.

To the Editors of THE LANCET.

SIRS,—Might I ask you to inquire through THE LANCET if there is any home or institution for medical men suffering from incurable illness, and destitute? My husband has had three strokes and is partially paralysed in the legs and can walk but slowly. His mind has given way and he will never be able to follow his profession again. All his life he has been more or less in ill-health and has never been able to save. The home has been broken up and I have had to go out as housekeeper. My salary has not allowed me to pay for him in a private home and I wish to know if there is any charitable institution for medical men in this sad condition. He is at present in the workhouse, not allowed to wear his own clothes, and, although kindly treated, the surroundings are sad to a man whose mind, although impaired, is still fully alive to his present sad position. I enclose my address, trusting to your kindness to forward me a reply.

I am, Sirs, yours faithfully,

AN OBJECTIONABLE ADVERTISEMENT.

IN THE LANCET of April 22nd, 1899, p. 1134, we animadverted upon some of the advertising methods of the Antikamnia Company. We have now received an indignant letter from a nurse who says that she received a post-card on which were printed the following words:—

WOMEN ON SHOPPING TOURS.

The following, taken from the *Trained Nurse and Hospital Review*, the leading publication of its class in America, and the only one entitled to the distinction of being "The Graduate Nurse's Journal," is interesting:—

"There are, no doubt, very many uses for antikamnia, of which physicians as a rule may be uninformed. A five-grain antikamnia tablet prescribed for patients before starting on an outing, and this includes tourists, picnicers, bicyclers, and in fact, anybody who is out in the sun and air all day, will entirely prevent that demoralising headache which frequently mars the pleasure of such an occasion. This applies equally to women on shopping tours, and especially to those who invariably return home cross and out of sorts, with a wretched 'sight-seer's headache.' The nervous headache and irritable condition of the busy business man is prevented by the timely use of a 10-grain dose. Every bicycle rider after a hard run should take two five-grain tablets on going to bed. In the morning he will awake minus the usual muscular pains, aches, and soreness. As a cure and preventive of the pains peculiar to women at time of period, antikamnia is unequalled and unaccompanied by habit or unpleasant after-effect. If the pain is over the lower border of the liver, or lower part of the stomach, or in short, be it headache, side-ache, backache, or pain of any other description caused by suppressed or irregular menstruation, it will yield to two five-grain tablets. This dose may be repeated in an hour or two if needed."

The Monogram ℳ on the Genuine Tablet Precludes Substitution.

GOOD CHEMISTS OFFER NO SUBSTITUTES.

The methods of the Antikamnia Company are deserving of the strongest reprobation. To print trash such as this on a post-card is to say the least, indecorous, and we should be glad if the Post-master-General could see his way to stop the dissemination of such matter.

"THE LYMPH OF THE NATIONAL VACCINE ESTABLISHMENT."

To the Editors of THE LANCET.

SIRS,—I have read with interest several of the letters of your correspondents about the quality of the lymph supplied by the National Vaccine Establishment. My experience has been similar to theirs. The first 70 cases I vaccinated, from January to June, were all successful, when a sudden change occurred. Some cases did not take at all and in some only one or two vesicles formed; occasionally only were all four insertions successful. My first failure began with Series 149, one failure out of four tubes; the three other tubes were only

partially successful. Series 156, one failure out of three tubes. Series 168 was very bad, one failure out of three tubes, and only three vesicles formed out of all the three tubes. Since then with Series 173, 181, and 188, although not so bad as Series 168, the results have not been satisfactory. Now what I should like to know is whether my vaccination is at fault or whether it has to do with the lymph supplied by the National Vaccine Establishment. For years I have bought calf lymph from one of the London establishments and have never had a failure, although I have vaccinated as many as 20 children from one tube by mixing glycerine with the lymph, so I cannot think that my vaccination is at fault. The matter could be easily settled if the National Vaccine Establishment would kindly publish in the medical papers the result of each series of lymph sent out. This could be done, as each public vaccinator has to forward the result of lymph supplied to him. I understand that after the vesicles have matured on the calf they are all scraped off and mixed with glycerine and allowed to stand for some time to let the glycerine get thoroughly mixed with the lymph before being put into the tubes. Is it possible if this mixing process is not thorough that some tubes may get more than their share of glycerine? Or is it possible that the hot weather may have had an effect on the lymph? I have given the numbers of the series used by me so that anyone who has used the same number can compare the results.

I am, Sirs, yours faithfully,
ARTHUR C. J. WILSON,
Penistone, August 28th, 1899. Public Vaccinator.

"THE REPAYMENT OF INCOME-TAX."

To the Editors of THE LANCET.

SIRS,—The publicity afforded by the press to the grievances suffered by income-tax payers has resulted in an enormous increase in the amount of repayments of overcharges, but complaints are daily more frequent and bitter of the action of local commissioners of income-tax in ignoring the returns of their profits made by traders and others on the too familiar buff form which comes with such unfailing regularity. The blue notices of charge are now being delivered and we would ask you to allow us to inform your readers who have made returns which have been ignored, or who have been assessed for the current year at a sum greater than the average of their profits for the three years ending April 5th, 1899, that they must at once give notice of appeal in accordance with the instructions on the notice of charge. Their best course is to appeal to the "Special Commissioners," as these gentlemen are Government officials, and, not being rival tradesmen, or influenced by personal, political, or other local feeling, may be relied upon to act with the greatest fairness. Moreover, if they find that the profits of the three years named show an average profit less than the amount upon which they paid tax for 1898-99, they should give notice of appeal in respect of that year also and claim repayment of the amount overpaid. There is no time to lose in business appeals, while a claim to set-off a loss in farming or business against income from other sources must be lodged before Oct. 6th next. Many people are now entitled to make a claim for three years to April 5th last where the income arises from investments, even when dividends are paid "free of income-tax" and the tax recoverable might amount to £38. We shall be pleased to advise your readers gratuitously whether they are entitled to any repayment on their sending us full particulars of their incomes from all sources and a stamped directed envelope for reply.

We are, Sirs, yours faithfully,
THE INCOME-TAX ADJUSTMENT AGENCY.
12 and 13, Poultry, London, E.C., Sept. 6th, 1899.

THE FELLOWSHIP OF THE ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

To the Editors of THE LANCET.

SIRS,—Could you kindly recommend me in your correspondence column of THE LANCET the books necessary to read for the F.R.C.S. Edinburgh, including abdominal surgery as a special subject?

I am, Sirs, yours faithfully,
Sept. 10th, 1899. F.R.C.S.E.

*** Our correspondent had better consult THE LANCET of Sept. 2nd, 1899. No particular books can be said to be "necessary" for any one examination. Besides the books upon various portions of abdominal surgery mentioned in THE LANCET such as Treves on "Intestinal Obstruction" our correspondent might read "Abdominal Surgery," by the late Mr. J. Greig Smith, published by Arrowsmith, Bristol.—ED. L.

SCHOOLS FOR THE DEAF.

To the Editors of THE LANCET.

SIRS,—May I direct attention to an excellent private school for deaf children which for want of support is in danger of becoming extinct after many years of useful work? The principal, whom I know intimately, is the best man I ever met and an acknowledged authority on the German system of instruction adopted in the school. The children are not only taught to speak; they receive a good though of course elementary education and under the direct superintendence of the principal's wife enjoy every care and home comfort. It is always a pleasure to me to note their bright happy faces and evident attachment to their teachers. The school is healthily situated in North-west London and is easy of access for day pupils. I appeal to you, Sirs, to allow me to bring the establishment before the notice of the medical profession. It is a thousand pities that it should languish for want of being known—the only reason, I am certain. I will at once forward the address to any medical man who will be good enough to write to me and gladly give any further information. I am, Sirs, yours faithfully,

F. DOUGLAS ROBINSON.
S. John's Clergy House, Horselydown, London, S.E.,
August 31st, 1899.

"THE USUAL BOND."

To the Editors of THE LANCET.

SIRS,—A and B are partners; A, the senior partner, sells his share to B with the usual bond not to practise within seven miles of the district which he leaves. He (A) buys a practice about 15 miles distant; a patient, an old one, of his comes to him for advice to his new residence; is he within his rights in giving that advice and in taking a fee for the same? B has requested him to absolutely refuse (without B's consent) to have anything whatever to do with any cases that may come from B's district; A contends that he is strictly within his rights.

I am, Sirs, yours faithfully,
Sept. 12th. VEXATA QUÆSTIO.

*** We do not think it necessary for A to refuse to see old patients of his who seek him out of their own free will, but of course much must depend on the actual wording of the bond. It must always be remembered that buying a practice does not necessarily mean buying patients. A should, of course, refrain from trying in any way to attract his old patients.—ED. L.

THE PLAGUE AND RATS.

To the Editors of THE LANCET.

SIRS,—It is very generally believed that the contagion of plague, as in the case of cholera, is disseminated to a considerable extent by the movements of rats both aboard ship and on *terra firma*. Assuming this hypothesis to be well-grounded, is it not of importance to consider whether it is not possible to make these carriers of infection become the media of disinfection? It might be worth while to resort to a very simple and well-known expedient for this purpose—namely, by capturing a few of these rodents in any affected area or on board seagoing vessels, and after giving them a tar bath turn them into their holes again on a cleansing mission. I have myself adopted this plan with success for the clearing of domestic and farm premises. It has proved effective not merely as a temporary but as a permanent means of riddance. The *modus operandi* is to trap the rats in a wire cage, take them out with a pair of tongs and dip them into coal tar up to their necks, taking care not to touch their heads, and then let them go down their holes again. In this way the very root of infection may be got at more effectually than by any other means.

I am, Sirs, yours faithfully,
Sept. 11th, 1899. G. T. BATES.

A CASE FOR DIAGNOSIS.

To the Editors of THE LANCET.

SIRS,—I have at present under my care a girl, aged thirteen and a half years, with persistent jaundice of two and a half years' duration. The attack began with a chill, or was attributed to one, and the colour has varied at different times from a deep copper colour to a faint yellow. The patient is tall for her age, having grown rapidly, and is now 5 ft. 8 in. high; she is bright and intelligent and there is no family history of phthisis or other disease. There has never been any pain or symptoms of gall-stones and no albuminuria. Occasionally she has slight pains in the joints, but never suffers from headache or dyspepsia or vomiting. When her colour is bad she suffers from "night blindness," but this always improves when her colour gets lighter. About four months ago she had a slight pleuritic effusion on the left side and this is now quite absorbed. The liver and spleen have never been enlarged, nor is the liver contracted. At one time, about 12 months ago, her face was very puffy and she had œdema of the feet and ankles and after a course of thyroid extract it disappeared entirely. I have tried all known drugs without success and massage has been used systematically. Strict dieting at first appeared to do good but she now takes ordinary food without any ill effects. The bowels are slightly relaxed and act about twice daily, the motions are light in colour and not always formed, and the urine is bile-stained and occasionally copious. She has been seen by numerous consultants and most carefully examined, but none have ever been able to throw any light on either the causation or treatment of the case and in most instances any remedies they have suggested have made her worse.

I should be most thankful for any suggestions for treatment or any help towards a diagnosis. I should add that her heart and lungs are free from disease and that menstruation has not begun.

I am, Sirs, yours faithfully,
Sept. 13th, 1899. PERPLEXED.

Mr. J. Lewis.—We do not know any recipe for making banana flour, but if our correspondent will refer to THE LANCET of Oct. 6th, 1894, p. 800, he will find a notice of some banana flour analysed by us.

Dr. L. Kidd (Enniskillen) and Dr. D. J. A. Chowry Muthu (Ventnor).—We shall publish a further list in an early issue.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Sept. 14th, 1899.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radiation Vacuo.	Maximum Temp. Shade.	Min. Temp	Wet Bulb.	Dry Bulb	Remarks at 8.30 A.M.
Sept. 8	29·93	N.	0·24	105	77	64	64	67	Cloudy
„ 9	30·13	N.W.	...	115	77	56	55	60	Cloudy
„ 10	30·17	N.W.	...	100	66	56	58	62	Cloudy
„ 11	30·20	N.W.	...	76	67	50	51	55	Cloudy
„ 12	30·11	N.E.	...	95	69	55	58	61	Overcast
„ 13	30·07	S.W.	...	88	71	54	55	58	Hazy
„ 14	30·01	N.E.	...	89	66	57	57	61	Cloudy

During the week marked copies of the following newspapers have been received: *Cambrian, Norfolk Chronicle, Swansea Journal, Cork Herald, Yorkshire Post, Morning Post, Daily Mail, Manchester Evening Chronicle, Liverpool Daily Post, Manchester Guardian, Citizen, Scotsman, Architect, Times of India, Pioneer Mail, Leeds Mercury, Builder, Cornishman, Bristol Mercury, Western Morning News, York Daily Herald, Dundee Advertiser, Folkestone Express, Dewsbury Reporter, Cheltenham Mercury, Halifax Guardian, Leicester Daily Post, Craven Herald, Horley Advertiser, Blackburn Guardian, Nottingham Daily Guardian, Market Harborough Mail, Morning Herald, Surrey Leader, Salisbury Journal, Redditch Indicator, Westminster Gazette, Sheffield Daily Telegraph, Ross Gazette, Grimsby News, Chicago Evening Post, Waterford Daily Mail, Brighton Gazette, Glasgow Herald, Sanitary Record, Spalding Free Press, Kentish Mercury, Ardrossan and Saltcoats Herald, Newmarket Journal, Mining Journal, Reading Mercury, City Press, County Echo (Fishguard), Hertfordshire Mercury, Surrey Advertiser, Taunton Echo, Nuneaton Observer, Midlothian Journal, Warwick Times, Manx Sun, Beverley Guardian, Hastings News, Herts Advertiser, Middlesex County Times, Redworth Observer, Hub, Local Government Journal, Pembroke County Guardian, Local Government Chronicle, Weekly Free Press and Aberdeen Herald, Sheffield Daily Gazette, Beverley Record, Paisley and Renfrewshire Gazette, Peterhead Sentinel and Buchan Journal, Borough of Marylebone Mercury, Stamford Guardian, &c., &c.*

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (18th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (2 P.M.).

TUESDAY (19th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), Guy's (1.30 P.M.), St. Thomas's (3.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (2 P.M. and 6 P.M.), Royal Ear (3 P.M.).

WEDNESDAY (20th).—St. Bartholomew's (1.30 P.M.), University College, (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (2 P.M.), Cancer (2 P.M.).

THURSDAY (21st).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (2 P.M.), St. Mark's (2 P.M.).

FRIDAY (22nd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M., Ophthalmic 10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (2 P.M. and 6 P.M.).

SATURDAY (23rd).—Royal Free (9 A.M. and 2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), University College (3.15 P.M.), Charing-cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), London Throat (2 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

TUESDAY (19th).—WEST-END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM (73, Welbeck-street, W.).—4 P.M. Mr. Work Dodd: Cases of Disorders of the Eye in Nervous Diseases.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this Office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers, not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index to Vol. I. of 1899, which was completed with the issue of June 24th, and the Title-page to the Volume, were given in THE LANCET of July 1st.

VOLUMES AND CASES.

VOLUMES for the first half of the year 1899 are now ready. Bound in cloth, gilt lettered, price 18*s.*, carriage extra.

Cases for binding the half-year's numbers are also ready. Cloth, gilt lettered, price 2*s.*, by post 2*s.* 3*d.*

To be obtained on application to the Manager, accompanied by remittance.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, W.C., are dealt with by them. Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

The rates of subscriptions, post free, either from THE LANCET Offices or from Agents, are:—

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 12 6	One Year	£1 14 8
Six Months	0 16 3	Six Months	0 17 4
Three Months	0 8 2	Three Months	0 8 8

Subscriptions (which may commence at any time) are payable in advance.

SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE. It has come to the knowledge of the Manager that in some cases higher rates are being charged, on the plea that the heavy weight of THE LANCET necessitates additional postage above the ordinary rate allowed for in the terms of subscriptions. Any demand for increased rates, on this or on any other ground, should be resisted. The Proprietors of THE LANCET have for many years paid, and continue to pay, the whole of the heavy cost of postage on overweight foreign issues; and agents are authorised to collect, and do so collect, from the Proprietors the cost of such extra postage.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied. Address—THE MANAGER, THE LANCET OFFICES, 423, STRAND, LONDON, ENGLAND.

Communications, Letters, &c., have been received from—

A.—Mr. J. Adams, Southampton; Messrs. Allen and Hanburys, Lond.; Messrs. Arnold and Sons, Lond.; Dr. G. S. Abram, Reading; Dr. J. R. Armstrong, Treorchy; A. E. P.

B.—Dr. D. Bower, Bedford; Mr. A. Browne, Leicester; Mr. Valentine Ball, Lond.; Messrs. Belford and Co., Lond.; Mr. W. H. Brown, Leeds; Mr. J. Bell, Hong-Kong; Messrs. J. N. Bishop and Sons, Lond.; Dr. Bantigny, Roubaix, France; Messrs. F. B. Benger and Co., Manchester; Birmingham and Midland Hospital for Skin, &c., Diseases, Secretary of; Sir James Crichton Browne, Lond.; Mr. G. T. Bates, Builth Wells; Mr. C. A. G. Browne, Lond.; Dr. A. Bronner, Bradford; Messrs. Burgoyne, Burbidges, and Co., Lond.; B. L. T.; Dr. Noel Bardswell, Sheffield; Borough of Hove, Town Clerk of.

C.—Messrs. Crossley, Moir, and Co., Lond.; Chelsea Hospital for Women, Secretary of; Cumberland, &c., Lunatic Asylum, Carlisle, Secretary of; Dr. J. H. Crocker, Eccles; Messrs. Cassell and Co., Lond.; Miss Coates, Bournemouth; Dr. W. H. Coates, Hull; Dr. W. F. Cornwall, Orpington; Dr. J. B. Clarke, Northwich; Dr. S. Crawshaw, Ashton-under-Lyne; Dr. T. A. Clinch, Winterton; Dr. Campbell Clarke, Hartwood; Coast Development Co., Ltd.; Dr. R. Craik, Conisboro'; Mr. W. H. Cook, Huddersfield.

D.—Paul H. Derrick Advertising Agency, Lond.; Dental Manufacturing Co., Lond.; Mr. A. B. DuPrey, Port of Spain, Trinidad; Dr. H. B. Daniell, Greenhithe; Mr. F. Dixon, Lond.

E.—Mr. R. W. Eley, Batley; Captain H. M. Earle, I.M.S.

F.—Messrs. Ferris and Co., Bristol; Francis, Stevenage; Dr. A. Forsyth, Mevagissey; Mr. S. D. Flamm, Paris; Dr. F. E. Freemantle, Lond.

G.—Mr. J. H. Goldwin, Rochester; Glasgow Eye Infirmary, Secretary of; Glasgow Royal Infirmary, Medical Superintendent of; Mr. F. J. Gant, Lond.; Dr. F. C. B. Gittings, Chatham; Sir William Gairdner, Tobermory.

H.—Messrs. C. J. Hewlett and Son, Lond.; Mr. J. B. Hall, Bradford; H. M.; Mr. F. J. Hanbury, Lond.; Hospital Reform Association, Secretary of.

J.—Journal of State Medicine, Lond.

K.—Messrs. Kirby and Son, Harrogate; Dr. L. Kidd, Enniskillen; Mr. J. Keast, Bristol.

L.—Capt. G. Lamb, Netley; Messrs. R. and S. Livingstone, Edinburgh; Mr. William London, North Berwick; "L. G."; Mr. J. Lewis, Lond.; Mr. V. Langford, Castleford; Mr. J. N. Lambert, Ware; "Locum."

M.—Medical Graduates' College and Polyclinic, Lond., Medical Superintendent of; Mr. J. S. Morris, Lond.; Messrs. Macmillan and Co., Lond.; Dr. G. Mowat, Wigan; Mr. A. J. Manasseh, Beyrout; Dr. C. J. Miller, New Orleans; Messrs. Z. P. Maruya and Co., Tokio, Japan; Messrs. J. Murdoch and Co., Lond.; Mr. W. Morley, Lond.; Dr. Chowry Muthu, Ventnor; Mr. William Mair, Edinburgh.

N.—Dr. C. P. Noble, Philadelphia; National Association for the Prevention of Consumption, Secretary of; Dr. G. H. F. Nuttall, Cambridge; Mr. G. T. W. Newsholme, Sheffield.

O.—Mr. J. O'Brien, Great Yarmouth.

P.—Mr. C. Prentice, Chicago; Mr. F. Pamphilon, Gloucester; Dr. J. F. Payne, Lond.; Mr. Young J. Pentland, Edinburgh; P. L. L.; Mr. G. B. Petri, Manchester.

R.—Royal Devon and Exeter Hospital, Exeter, Secretary of; Mr. R. Redpath, Newcastle-on-Tyne; Rev. F. D. Robinson, Lond.; Mr. Percy Rose, Lond.; Mr. G. Q. Roberts, Lond.; Messrs. Robertson and Scott, Edinburgh.

S.—Messrs. W. H. Smith and Son, Birmingham; St. Andrew's Hospital, Northampton, Secretary of; Mr. E. Schloesser, St. Cergue; Mr. A. Stenhouse, Glasgow; St. Mungo's College, Glasgow, Secretary of; Mr. C. J. Symonds, Lond.; Khan Bahadur Sulemani; Sanitas Co., Lond.; Sanitary Institute, Lond.; Dr. Ramsay Smith, Adelaide; Messrs. Street and Co., Lond.; Mr. C. W. Seccombe, St. Austell.

T.—Dr. C. Bell Taylor, Nottingham; Tower House Retreat, Westgate-on-Sea, Secretary of; Dr. J. C. Thresh, Chelmsford; "Traveller"; Taunton and Somerset Hospital, Taunton, Hon. Secretary of; "Twenty Years in India."

V.—Mr. J. W. Vickers, Lond.; Vexata Quæstio.

W.—Messrs. Wills, Ltd., Lond.; Westminster General Dispensary, Secretary of; West Riding Asylum, Menston, Clerk of.

Y.—Dr. John Young, Glasgow; York County Hospital, Secretary of.

Letters, each with enclosure, are also acknowledged from—

A.—Mr. F. C. Angear, Plumstead; Messrs. C. Ash and Sons, Lond.; Mr. G. C. Adams, Manchester; Mr. F. C. Allen, Watford; A. C.; Messrs. Ayrton and Saunders, Liverpool; Dr. G. H. Anderson, Loftus; Dr. P. Armstrong, Cardiff; A. L.; A. B. H.; A. E. G.

B.—Messrs. Buchner, Schacht, and Co., Lond.; Mr. J. S. Beveridge, Milnathort; Dr. G. G. Bothwell, Twyford; B.M.; Dr. J. C. Bowie, Clousta, Shetland; Bristol Eye Hospital, Secretary of; Birmingham, &c., Hospital for Skin Diseases, Treasurer of; Mr. B. Brown, Huddersfield; Dr. J. L. Bunch, Lond.; Dr. H. A. Benham, Fishponds; Mr. T. W. Bevan, Nantyglo; Dr. J. Biggam, Upper Gornal; Mr. C. L. Bedford, Birmingham.

C.—Mr. J. B. Cameron, Lond.; Messrs. W. and R. Chambers, Edinburgh; Messrs. Curling, Wyman, and Co., Lond.; C. M. R., Civil Service Supply Association, Lond.; Dr. E. J. W. Carruthers, Congleton; C. B. M.

D.—Mr. A. K. Dresser, Calstock; Mr. H. Dodd, Birsay, Orkney; *Devon and Exeter Gazette*, Exeter, Proprietors of; Dumfries and Galloway Royal Infirmary, Dumfries, Treasurer of; Durham Co. Asylum, Ferryhill, Clerk of; Dr. E. C. Dobie, Chester.

E.—Mr. J. M. Evans, Llandrindod Wells; Messrs. Elliott, Son, and Boyton, Lond.; E. S. S.; Mr. C. Etheridge, Whitstable; E. R. B.; E. M. S.

F.—Mr. F. A. C. Fletcher, Crosshills; French Hospital, Lond., Secretary of; F.R.C.S., Manchester; Fellowship, Bewdley; Flower House, Catford, Medical Superintendent of.

G.—Mr. G. Green, Bexhill-on-Sea; Dr. T. J. Grime, Hawes; Dr. J. Grant, Napanee, Canada; Surgeon W. H. O. Garde, H.M.S. *Research*, Poolewe.

H.—Messrs. W. C. Henderson and Son, St. Andrews; Dr. J. S. Hicks, Falmouth; H. E. G.; Mr. R. Harrison, Lond.; Haydock Lodge, Newton-le-Willows, Secretary of; Mr. W. Herbert, Liverpool; Mr. S. Hogg, Belfast; H. D.; Harrogate Corporation; Mr. H. E. Haycock, Codnor Park.

I.—Dr. W. W. Ireland, Polton.

J.—Mr. M. Johnston, Bewdley; J. W. G.; J. W. R., Bristol; J. H.; J. D. H.; J. R.; J. F. S.

K.—Messrs. Keith and Co., Edinburgh; Dr. A. Kay, Motherwell; Mr. R. L. Keown, Monaghan; Mr. W. Kirwan, Oranmore; Dr. R. Knox, Lond.; K., Lond.; Mr. R. A. Keys, Castlefin.

L.—Mr. H. P. Long, Crowborough; Mr. W. V. V. Lidgerwood, Lond.; Mr. C. Lakin, Leicester.

M.—Messrs. J. M'Geachy and Co., Glasgow; Mr. W. A. Mushé, Lond.; Dr. F. J. McKettrick, Lond.; Mr. M. D. Makuna, Treherbert; Dr. G. F. McCleary, Tunbridge Wells; M. E. B.; Male Nurses' (Temperance) Coöperation, Secretary of; M. S. McD.; Dr. A. H. McCracken, Dalbeattie; Dr. A. W. Miller, Lond.; Messrs. C. Mitchell and Co., Lond.; Mr. E. A. McMillan, Aberdeen.

N.—Northern Medical Association, Glasgow; Mr. B. Newton, Lond.

O.—Dr. E. Oliphant, Bucksburn; Optimus, Dover.

P.—Messrs. W. Porteous and Co., Glasgow; Principal, Stocksteads; Mr. E. A. Piggott, Clare; Miss Pink, Dawlish; Mr. T. J. Pierce, Lond.; Dr. J. B. Pettigrew, St. Andrews; Mr. L. H. Pearson, Bradford; Mr. E. A. Purcell, Exeter; Mr. E. W. Pilbeam, Brighton.

Q.—Queen's Hospital, Birmingham, Secretary of.

R.—Dr. R. M. Ralph, Lond.; Messrs. Ross, Ltd., Lond.; Retreat (The), York, Secretary of; R. R. D.; Messrs. Richardson Bros. and Co., Liverpool; Dr. G. E. Rennie, Lond.; Dr. H. D. Rolleston, Lond.; R. W. J.; R. S.; Mr. W. C. Ross, Inniskeen; R. H. H.; R. W. H.

S.—Mr. W. D. Spanton, Hanley; Mr. D. Samuel, Gowerton; Dr. A. W. Sandford, Cork; Stanley Hospital, Liverpool, Secretary of; Messrs. Spiers and Pond, Lond.; Dr. J. Selkirk, Boston Spa; Dr. R. J. H. Sullivan, South Kirkby; Mr. W. F. Stevenson, Manchester; Dr. S. H. Snell, Grays; Surgeon, Ilford; Mr. C. Stonham, Lond.

T.—Dr. G. N. W. Thomas, Llanvaches; T. D. C.; T. B.; T. C. J.; Mr. J. Thin, Edinburgh; Mr. J. J. Tate, Bideford.

V.—Vulcan, Bradford.

W.—Dr. O. Williams, Glandovey; *Wilts County Mirror*, Salisbury; W. J.; Worksop Dispensary, Secretary of; Mr. J. Williams, Bradford; Whitehaven, &c., Infirmary, Secretary of; W. E. A.; W. E. T.

X.—X, Sheffield.

EVERY FRIDAY.

THE LANCET.

PRICE SEVENPENCE.

SUBSCRIPTION.

FOR THE UNITED KINGDOM.	
One Year £1 12 6	
Six Months 0 16 3	
Three Months 0 8 2	

POST FREE.

TO THE COLONIES AND ABROAD.	
One Year £1 14 6	
Six Months 0 17 4	
Three Months 0 8 8	

Subscriptions (which may commence at any time) are payable in advance.

ADVERTISING.

Books and Publications	Seven Lines and under	£0 5 0
Official and General Announcements	Ditto	0 5 0
Trade and Miscellaneous Advertisements	Ditto	0 4 6
	Every additional Line	0 0 6

Quarter Page, £1 10s. Half a Page, £2 15s. An Entire Page, £5 5s.

Terms for Position Pages and Serial Insertions on application.

An original and novel feature of "THE LANCET General Advertiser" is a Special Index to Advertisements on pages 2 and 4, which not only affords a ready means of finding any notice, but is in itself an additional advertisement.

Answers are now received at this Office, by special arrangement, to Advertisements appearing in THE LANCET.

Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

The Manager cannot hold himself responsible for the return of testimonials, &c., sent to the Office in reply to Advertisements; copies only should be forwarded.

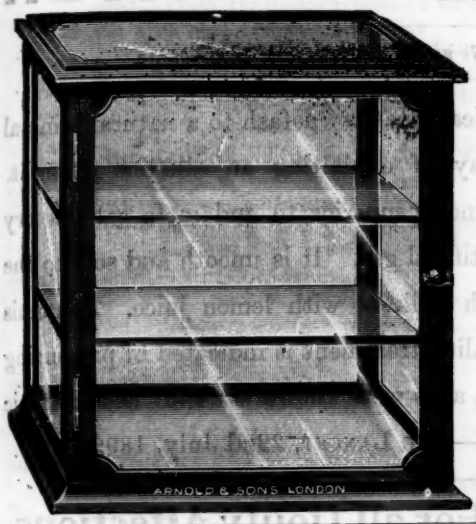
Cheques and Post Office Orders (crossed "London and Westminster Bank, Westminster Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Office, 423, Strand, London, to whom all letters relating to Advertisements or Subscriptions should be addressed.

THE LANCET can be obtained at all Messrs. W. H. Smith and Son's and other Railway Bookstalls throughout the United Kingdom. Advertisements are also received by them and all other Advertising Agents.

Agent for the Advertisement Department in France—J. ASTIER, 8, Rue Traversière, Asnières, Paris.

NEW ASEPTIC INSTRUMENT CABINETS

(REGISTERED).



Price

18 × 15 × 8 ins.

With 2 Plate Glass Shelves

£1 15s. 0d.

Aseptic Enamelled Iron Stand for above, 15/-.

LONDON MANUFACTURE.

Price

24 × 18 × 11 ins.

With 2 Plate Glass Shelves

£2 15s. 0d.

Aseptic Enamelled Iron Stand for above, 17/6.

LONDON MANUFACTURE.

EXTRACT FROM THE LANCET, March 5th, 1898:—"Messrs. ARNOLD & SONS, of West Smithfield, inform us that they have constructed a cabinet for the storing of surgical appliances at a price that will place it within the reach of every general practitioner. It is made of iron enamelled white, with ¼-in. polished plate glass top, back, sides, and door, with two plate-glass shelves with polished edges, and is manufactured in two sizes—18 × 15 × 8 in., 35s.; and 24 × 18 × 11 in., 55s. The Cabinet should prove useful to many institutions and practitioners."

THE PHONOPHORE

(AN IMPROVED STETHOSCOPE).

Patented.

FIG. 1.

FIG. 2.

FIG. 3.

UNSOLICITED TESTIMONIALS.

"DEAR [SIRS,—I beg to thank you for the best Stethoscope I have ever used, and during the last forty years I have used a good many.—Yours faithfully, W. M. D."

"Cumberland.

"GENTLEMEN,—I am exceedingly pleased with the Phonophore. It is the best form of Stethoscope I have ever used, and deserves a big sale.—Yours faithfully, J. B."

"Bournemouth.

"DEAR SIRS,—Your Phonophore is a very ingenious Stethoscope; it has wonderful sound-conducting qualities.—Yours faithfully, W. F. C."

"Machynlleth.

"GENTLEMEN,—I am extremely pleased with the Phonophore, it was exactly what I required. Thanking you for your very prompt attention —Yours truly, W. R. W."

"Northampton.

"DEAR SIRS,—I received the Phonophores safely, and am much pleased with them."—Yours truly, J. B. H."

"Merthyr Vale.

"GENTLEMEN,—Your Phonophore-Stethoscope received is very satisfactory.—Yours faithfully, D. K. D."

PHONOPHORE (Single) with metal stem, nickel-plated, vulcanite ear-piece, and india-rubber cap fitted to chest-piece, complete (Fig. 1)	£0	5	6
Do.	Binaural, with india-rubber ear-pieces and cap fitted to chest-piece, complete (Fig. 2)	0	12	6
Do.	with flexible india-rubber tube, ear-piece, and plated mount, complete (Fig 3)	0	6	6
Do.	Chest-piece only, for attaching to Binaural Stethoscope	0	5	6

ARNOLD & SONS, Surgical Instrument Manufacturers,

By Appointment to Her Majesty's Government; the Honourable Council of India; The Admiralty; The Crown Agents for the Colonies; Her Majesty's Prisons; Foreign Governments; Royal Chelsea Hospital; St. Bartholomew's Hospital; and the principal Provincial and Colonial Hospitals, &c.

26, 30, & 31, WEST SMITHFIELD, and 1, 2, & 3, GILTSPUR STREET, LONDON, E.C. (Opposite St. Bartholomew's Hospital.)

Telegraphic Address: "INSTRUMENTS, LONDON." ESTABLISHED 1819. Telephone No. 518 (Holborn.)

JOHANNIS POTASH WATER

Each small bottle guaranteed to contain 7½ grains of Potassium Bicarbonate.

"The addition of a definite amount of bicarbonate of potash to a natural mineral water affords an agreeable and effective way of exhibiting an alkaline draught. Johannis Potash Water possesses a taste distinctly superior to and more satisfactory than the ordinary potash water made with artificial gas. It is smooth and soft to the palate and affords an excellent beverage with milk or with lemon juice. Johannis Potash Water offers the advantage where alkaline treatment is indicated of presenting a constant amount of the potash salt, which as is well known is useful as a diuretic and in preserving the alkalinity of the blood."—THE LANCET, 22nd July, 1899.

JOHANNIS-LITHIATED. For all Gouty Affections.

OF ALL CHEMISTS AND MINERAL WATER DEALERS.

Sole Importers: THE APOLLINARIS COMPANY, Limited, London, W.

SOMATOSE"

SOMATOSE is acknowledged by eminent Medical Authorities at home and abroad to be

AN IDEAL INVALID FOOD.

SOMATOSE contains nearly 80 per cent. of Meat Albumen, is invaluable in wasting diseases, puts life and strength into the weakest invalids, as well as those whose condition precludes the use of ordinary food.

SOMATOSE is an almost tasteless and odourless powder, easily tolerated by the most delicate stomachs.

SOMATOSE is not a Patent Medicine or a drug, but a Therapeutic Food in a form which has never before been obtained. It is easily soluble in water, milk, soup, coffee, cocoa, &c.

SOLD BY ALL LEADING CHEMISTS AND STORES.

SAMPLES AND ALL PARTICULARS FROM

THE BRITISH SOMATOSE CO., Ltd.,

165, QUEEN VICTORIA STREET, LONDON, E.C.

THE WM. S. MERRELL CHEMICAL CO.,

ESTABLISHED 1830.

Fluid Hydrastis—This is not a Fluid Extract; and in prescribing, the word "Extract" should not be used. Fluid Hydrastis represents all the active medicinal constituents of the drug, freed from the associated resinous principles. It is non-alcoholic, non-resinous, non-irritating, and is the great corrector of all abnormal conditions of the mucous surfaces. Mixes with alcohol, glycerin, wine, syrup or water, without precipitation.

TRADE MARK REGISTERED.

The Great Tonic and Corrector of the Mucous Surfaces.

FLUID HYDRASTIS.

NON-RESINOUS. NON-ALCOHOLIC.

BLAND AND NON-IRRITATING.

FLUID HYDRASTIS IS NOT SOLD IN BULK.

In Leucorrhœa,
with thick albuminous discharge like the white of an egg, use locally by injection, 1 to 4 drs. to one pint of water, three or four times per day.

In Gonorrhœa,
as an injection; and in *Balanitis* as a wash; use 1 to 2 drs. to water 4 oz.

In Stomatitis,
Pseudo-membranous, ulcerative, or gangrenous, when the inflammation is sub-acute or characterised by profuse secretion of ropy mucus, use as a gargle or wash in proportion of 1 to 2 drs. to water 4 ounces. When the breath is offensive, Pot Chlorate or Baptisia assists its action.

In Cystitis,
acute and chronic, when the urine is pale or greenish, and viscid from abundance of mucus, use internally 1 to 4 drs. in water 4 ounces. In the severer cases of Chronic Cystitis with phosphatic urine, rinsing out the bladder with tepid water, and following with Fluid Hydrastis 1 to 2 drs. to water 4 ounces (one ounce to be used as an injection into the bladder) is often of great benefit.

In Dyspepsia,
with undue activity of the mucous glands and deficient action of the gastric follicles, of which the symptoms are a heavily loaded tongue, especially at the base; and in the morning dull aching pains in the stomach, with sinking sensations, nausea, and occasional vomiting of vitiated mucus, use ½ to 1 ounce Fluid Hydrastis to a pint of sherry or native wine. Dessert-spoonful three or four times a day.

In Intermittents,
especially of the type characterised by disease of the *Gastro*-intestinal mucous membrane, with nausea, heavily coated tongue, broad and flabby and pale, or coated with yellow, dirty mucus; bowels constipated, or when moved, evacuations clay-coloured or streaked with mucus, use 1 to 4 drs. to water 4 ounces. Teaspoonful every three or four hours.

In Catarrh of the Intestines,
and superficial ulceration of the same; in fistula-in-ano, and hæmorrhage from the rectum. Internally, and locally by injection, 1 to 4 drs. to water 4 ounces.

As a Local Application,
to prevent decomposition, apply to the surface of cancerous growths and unhealthy ulcers and sores; as an injection into the bowels in diarrhœa and dysentery, and to correct the offensive character of many mucous discharges.

In many Chronic Diseases,
in which exist undue activity of the mucous membranes in some portion of the body, this remedy is of marked benefit as a *general tonic.* The following are some convenient forms for internal use:

℞ Fluid Hydrastis ½ to 1 fluid ounce, sherry wine sufficient to make one pint;
or ℞ Fluid Hydrastis ½ to 1 fluid ounce, syrup sufficient to make one pint;
or ℞ Fluid Hydrastis ½ to 1 Fluid ounces, Glycerin 2 fluid ounces, water sufficient to make one pint. Teaspoonful to a dessert-spoonful three or four times per day.

SUPPLIED BY ALL FIRST-CLASS CHEMISTS.

LONDON DEPOT: THE WM. S. MERRELL CHEMICAL CO.,
No. 7, Jeffrey Square, St. Mary Axe, London, E.C.

PRICE CURRENT AND LITERATURE UPON APPLICATION.

45

JOSEPH TURNER & CO.'S
NEW SYNTHETIC REMEDIES.

SYNTHESIZED and MANUFACTURED in ENGLAND.

PIPERIDINE TARTRATE. The New Uric Acid Solvent.

Piperidine possesses uric acid solvent powers greatly superior to any other known substance, and, in combination with tartaric acid, forms a pleasant salt, which may be taken in 5 to 15 gr. doses in a wines, mineral waters, &c., at or before meals.

(See THE LANCET, July 29th, 1899; BRITISH MEDICAL JOURNAL, Feb. 27th, 1897; CENTRALBLATT DER PHYSIOLOGIE, Bd. iii., p. 434.)

GUAIPEROL (Guaiacolate of Piperidine).

This **REMEDY for PHTHISIS**, which combines the antiseptic properties of Guaiacol with the vascular tonic action of Piperidine, has been tried with considerable success at the London and other Chest Hospitals. It has not the irritant properties of Guaiacol, and possesses many advantages over the latter substance and preparations of the same now on the market. DOSE: from 10 gr. twice a day, preferably in cachets, after meals.

(See BRITISH MEDICAL JOURNAL, January 16th, 1897, and July 15th, 1899, &c.)

ERYTHROL TETRA NITRATE (Turner).
The New Vaso Dilator.

The difference between the action of Erythrol Tetra Nitrate and other vaso dilators consists mainly in the fact that the vaso dilatation produced from it is of a *much more permanent* nature, the administration of gr. i. by the mouth causing a reduction in arterial tension lasting for more than five hours.

(See BRADSHAW LECTURE, 1898; CROONIAN LECTURE, 1898; BRITISH MEDICAL JOURNAL, April 10th, 1897, January 1st, 1898, and January 8th, 1898, &c.)

SOLE PATENTEES & MANUFACTURERS, from whom Samples and Literature may be obtained:—

JOSEPH TURNER & CO., Ltd., QUEENSFERRY, FLINTSHIRE, N.W.

LIQUOR FERRI ASSIM. (SANDRONS).

SANDRON'S ASSIMILABLE IRON.

This preparation, introduced into England in September, 1898, by Sandrons, Limited, is, chemically speaking, a permanent solution of Iron in combination with natural organic acids and with other organic substances—such, for instance, as Vegetable Albuminoids—together with the natural and assimilable salts of Potassium, Sodium, and Magnesium.

THE IRON PRESENT EXISTS IN AN ENTIRELY ASSIMILABLE FORM.

The Iron exists in this preparation in the same combinations as it occurs in the plants in nature: nothing whatever is added to the natural product. It is therefore absolutely assimilable and being so does not cause constipation, headache, indigestion, or blackening of the teeth.

SPECIALLY INDICATED IN ANÆMIA, CHLOROSIS, & NEURASTHENIA.

TRIAL BOTTLES, TOGETHER WITH LITERATURE, FREE TO THE PROFESSION.

Price 4/6 and 7/6 per bottle (stamped). Obtainable from all Chemists.

SANDRONS LTD., 34, Devonshire Street, Portland Place, W.

46

'TABLOID' BRAND
EFFERVESCENT MEDICINAL SUBSTANCES

TRADE MARK

'TABLOID' PREPARATIONS

of such drugs or combinations of drugs as are administered as effervescent draughts present distinct superiorities over the forms in which such therapeutic agents have hitherto

been presented to the medical profession. The accuracy with which the correct dose is apportioned renders 'Tabloid' Effervescent Medicinal Substances vastly preferable to preparations dispensed in uncertain teaspoonful doses which may be anything from one to three drachms or more. The portability of these 'Tabloid' products is also a distinguishing and convenient feature.

ABRIDGED LIST.

			Each
Caffeine Citrate Effervescent, B.P., gr. 60 (3.89 gm.) ...	tubes of	25	1/-
*Lithium Bitartrate, gr. 5 (0.324 gm.) (Effervescent) ...	botts. of	100	2/6
Lithium Citrate Effervescent, B.P., gr. 60 (3.89 gm.)...	tubes of	25	1/-
*Lithium Citrate, gr. 4 (0.259 gm.) (Effervescent)	botts. of	100	2/4
Magnesium Citrate (True) Effervescent, gr. 60 (3.89 gm.)	tubes of	25	1/-
Magnesium Sulphate Effervescent, B.P., gr. 60 (3.89 gm.)	,,	25	1/-
Magnesium Sulphate Compound Effervescent	,,	25	1/-
*Piperazine, gr. 5 (0.324 gm.) (Effervescent)...	,,	12	2/6
*Potassium Citrate, gr. 15 (0.972 gm.) (Effervescent) ...	,,	25	1/-
*Salicylic Acid, gr. 3 (0.194 gm.) (Effervescent)	,,	25	1/-
Sodium Phosphate Effervescent, B.P., gr. 60 (3.89 gm.)	,,	25	9d.
*Sodium Salicylate, gr. 5 (0.324 gm.) (Effervescent) ...	,,	25	1/-
Sodium Sulphate Effervescent, B.P., gr. 60 (3.89 gm.)	,,	25	1/-

*The weights stated are those of the special substances only and do not refer to the total weights of the 'Tabloid' products as in the case of the official preparations.

NOTE.—The therapeutic effect of such of these preparations as are aperients is increased if hot water be used and if the fluid be slowly sipped.

Burroughs Wellcome and Co.,
LONDON and SYDNEY.

[COPYRIGHT] H 167

"A perfect combination of Malt Extract and Cod-liver Oil."—*British Medical Journal.*

BYNOL

The "PERFECTED" Malt and Oil.

BYNOL, though containing a much larger percentage of COD-LIVER OIL than the ordinary preparations of MALT and OIL so widely sold, is, nevertheless, not only free from all unpleasant taste, but has a most agreeable nutty flavour, so that it is relished as a sweetmeat by many children. It can be taken without difficulty by delicate patients, being readily digested and assimilated. This result is due in large measure to the intimate combination of the MALT EXTRACT with the OIL, globules of the latter not being distinguishable even under a microscope.

The Malt Extract employed is exceptionally nutritious and active, while the Cod-liver Oil is of absolute purity, being made at Allen & Hanburys' own factories in Norway, from the fresh and selected livers of the Cod-fish only. *SAMPLES FREE TO MEDICAL MEN.*

"BYNOL"
"The Perfected"
MALT AND OIL
A Unique Combination of active Malt Extract with the "Perfected" Cod Liver Oil.
Manufacturers
ALLEN & HANBURYS Ltd
Plough Court, Lombard St, LONDON, E.C.

The late Sir ANDREW CLARK, in a lecture at the London Hospital, remarked:—

"I have said that these fibroid cases are poor creatures, thin and white, and have what may be called nutritive debility, and the question is, What am I to do with them? You cannot do better than endeavour to make the patient walk in the way of physiological righteousness. But that sometimes will not do. Some people may be physiologically well behaved, and somehow they do not thrive on it. Can you do anything in those cases? There are two remedies which sometimes do succeed where the ordinary diet will not succeed in nourishing the patient—the one is Cod-liver Oil and Malt given with food—a preparation called **BYNOL**—*and the other is the remedy called* **BYNIN EMULSION**, *consisting of Hypophosphites, Oil, and Malt; both are prepared by Messrs. ALLEN & HANBURYS. These are two good nutritive agents in promoting nutrition."*

ALLEN & HANBURYS LTD, Plough Court, Lombard St, LONDON, E.C.